ilway TRACK and STRUCTURES

Getting new life from old ti... p. 27

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- Transfers ballast from shoulders to heads and centers

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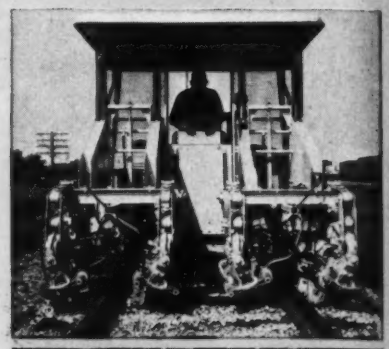

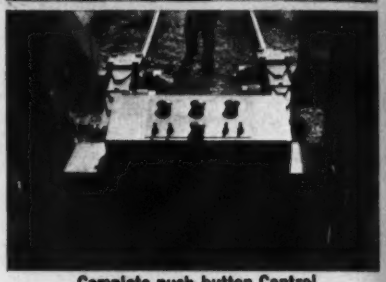

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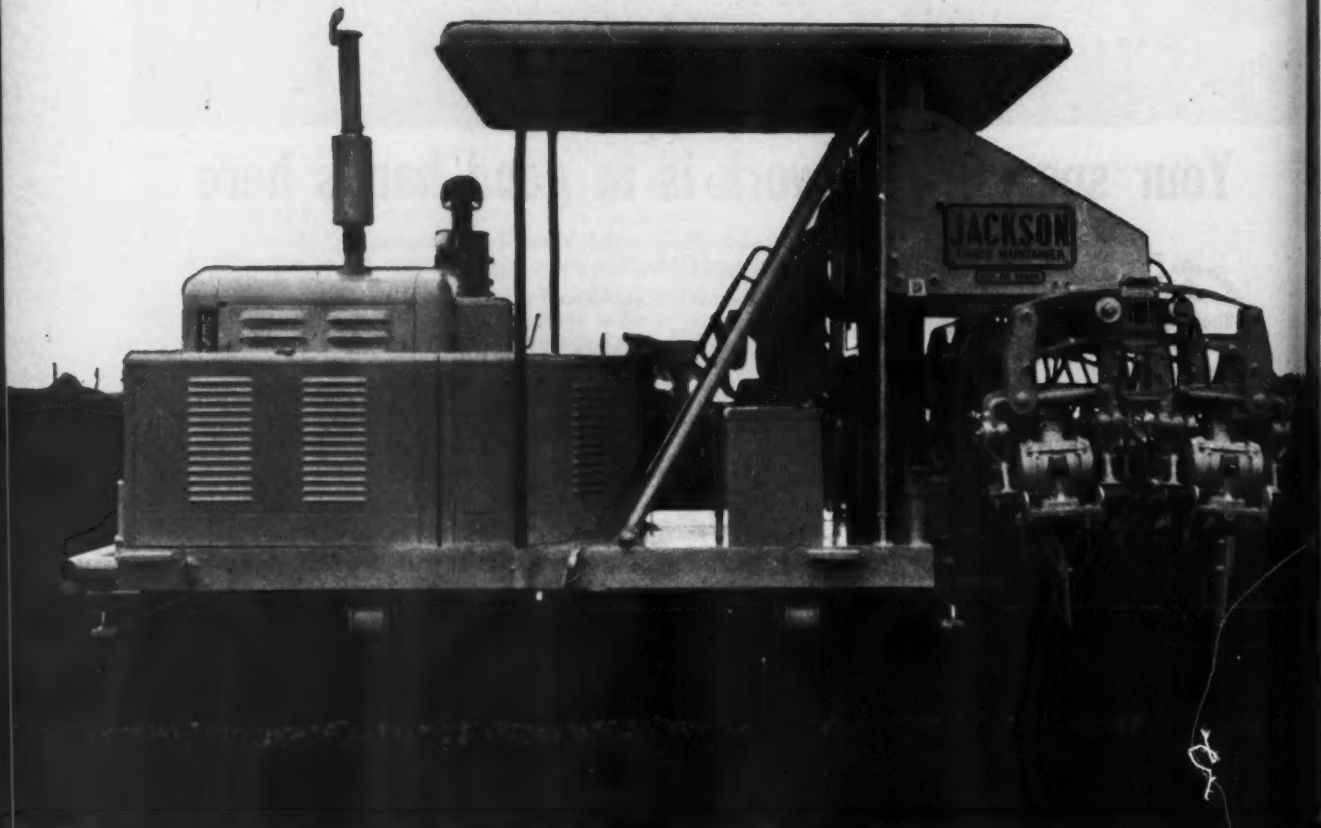

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Features

Departments

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The timber lining in the C&O's 3600-ft Pine Mountain tunnel appeared to be in need of renewal. Instead, however, it was subjected to a program of in-place treatment, at a fraction of the cost of replacement.

. . . in the December issue

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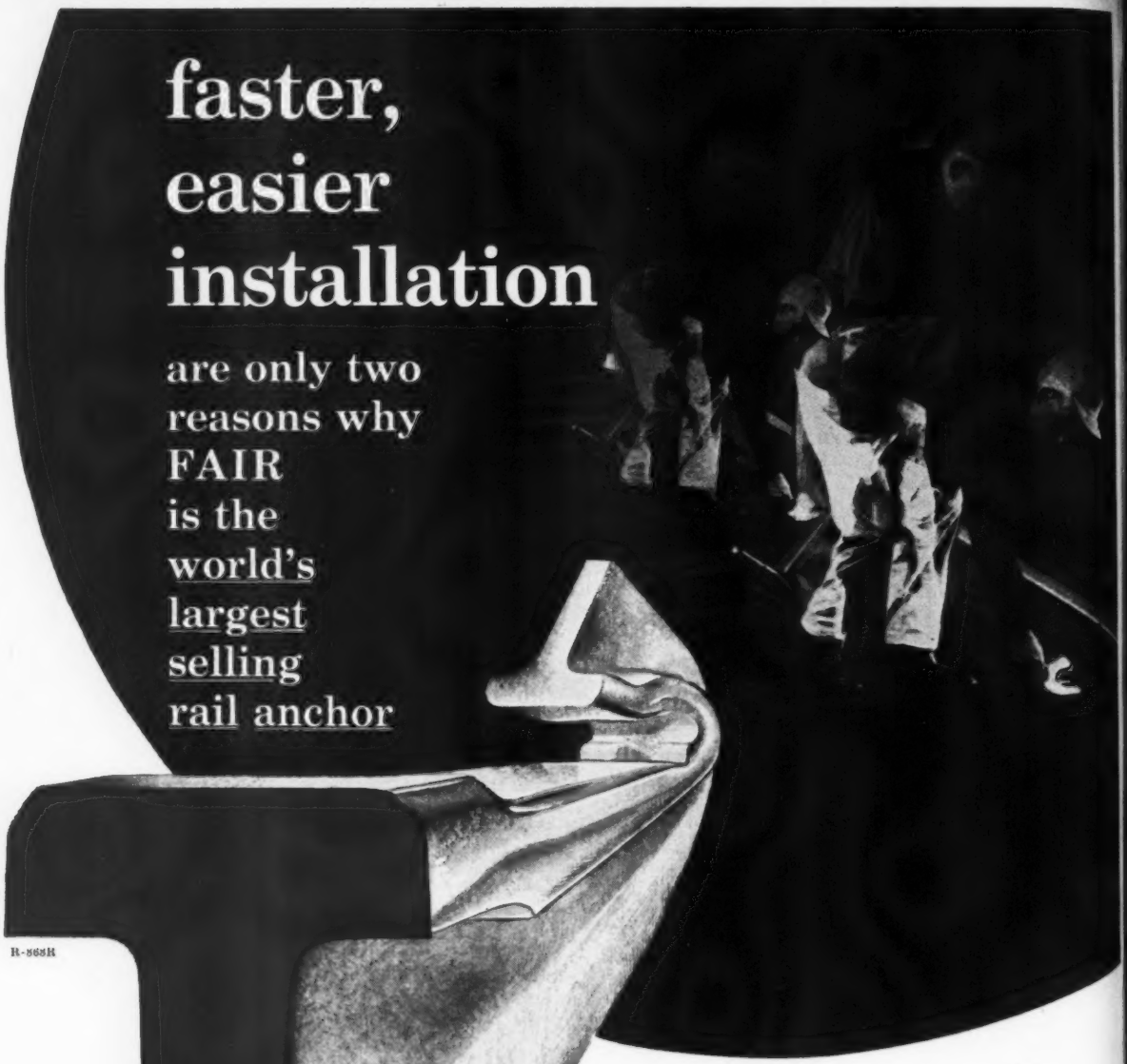

R-565R

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NEWS NOTES

. . . a résumé of current events throughout the railroad world

The public-hearing phase of the inquiry into the dispute over "featherbedding" rules has been concluded by the Presidential Commission. The hearings have extended over a period of eight months. The Commission's report is due December 1, but the labor-management agreement provides for a 90-day extension, presumably for mediation, if requested by a majority of the 15-member commission. The recommendations of the Commission, if mediation fails, will not be binding but both management and unions have agreed that proceedings of the Commission shall be considered and accepted in lieu of emergency-board procedures.

Any provision in a Teamster contract calling for a $5-per-trailer penalty from truck lines using rail piggyback service will be voided under a measure recently adopted by the Texas legislature. Illinois also outlaws such agreements.

Net income of Class I railroads in August was $60 million, which is double the August 1960 figure of $30 million. Estimated net income for the first eight months was $140 million, compared with 1960's $278 million. Thirty-two Class I roads failed to earn their fixed charges during this year's first eight months. Rate of return for all Class I roads during the 12 months ended with August was 1.61 per cent.

Gross capital expenditures of Class I line-haul railroads in 1961 are now expected to total about $650 million, down nearly 30 per cent from 1960's $919 million. Latest reports to the ICC also indicate that this year's $650 million will include about $401 million for equipment and $249 million for road facilities, compared with $634 million and $286 million, respectively, for 1960. Spending for road facilities has been stepped up in this year's second half. The reports indicate that the July-December total in this category will be $150.3 million, only 4.1 per cent less than the $156.7 million spent in the last half of 1960.

The crossing accidents probe launched by the ICC last February has been broadened by the Commission to include all collisions between trains and trucks, regardless of the commodities being moved by the trucks. The inquiry had previously been limited to grade-crossing accidents involving trucks carrying petroleum products and similar dangerous liquids. The broadening order also severs the investigation, which is No. 33440, from the No. 3666 inquiry into transportation of explosives and other dangerous articles by private carriers.

Public hearings were opened October 10 at St. Paul, Minn., by ICC Examiner Robert H. Murphy on the proposed GN-NP merger. The first witness was NP President Robert S. MacFarlane who testified that this unification is more essential than ever to eliminate "wasteful duplication of services," to provide a more efficient over-all transportation service and to meet intensified external competition.

Also on October 10, ICC Examiner John J. Bradford began public hearings in Washington, D.C., on the N&W's proposal to merge with the Nickel Plate, lease the Wabash and purchase Pennsylvania's 111-mile line between Columbus, Ohio, and Sandusky. N&W's President Stuart T. Saunders advanced six reasons why he thinks the merger-lease-purchase would promote public interest. NKP's President F. S. Hales and Wabash's President Herman H. Pevler also testified that the unification of these properties would provide better service to the shipping public.

Anonymous answers

In our "What's the Answer?" columns we occasionally publish an answer without showing the author's name or railroad. We attribute authorship to "Division Engineer," "Supervisor of Track," or "Chief Carpenter," or whatever title may be held by the respondent. We have been asked why we do this and who these authors are.

The purpose of these question-and-answer columns is to induce a frank discussion of subjects which are of common concern. To stimulate such discussions we endeavor to ask questions—some of which are of a controversial nature.

It is not surprising that occasionally a respondent may have ideas on a matter that may not be in accordance with the practices of his railroad. He may feel that his viewpoint is worth stating but he doesn't want to run the risk of incurring the displeasure of his superiors. This is a human and understandable attitude.

That is why, when a respondent submits an answer and requests anonymity, we respect his wishes and confidence. The best thing to do in such circumstances is to omit the respondent's name, railroad connection and location, and merely show his title.

Whether or not we know that his management is open-minded enough to accept constructive criticism so that the respondent's fears are groundless is not the point. The communication is submitted to us with a request for anonymity, and we are glad to comply.

However, if it is evident to us that a contributor is trying to use our pages for a personal vendetta, his answer is not printed.

Reducing guesswork in use of salvaged ties

In recent years the railroads as a whole have stepped up the practi of re-using ties salvaged from abandoned trackage. Of 34 railroads recent queried on this subject all but two said they were following the practi of inserting secondhand ties in existing trackage, primarily branch lin sidings, yard tracks and back tracks. Some, however, are putting the use ties in main tracks.

In practically all cases it was apparent that the railroads are justifyi the use of secondhand ties on the basis that they will have a certa minimum number of years of service life. In a few cases this was stat to be 4 or 5 years. On most roads the range was between 8 and 10 year although in a few cases the minimum service life demanded of a secon hand tie was 15 years or more. Apparently the criterion for justifying th use of salvaged ties is that the cost of handling and inserting the t when spread over the expected remaining service life, will not exceed th annual cost of a new tie.

Use of this criterion implies existence of the ability to predict with reasonable limits how much longer a tie can be expected to remain a serviceable condition. But there is a serious question regarding whet this ability exists. How often will two foremen, or two tie inspecto for that matter, agree on the probable service life of a given tie, esp cially if their inspections are made independently. More often than oth wise their predictions are apt to be years apart.

In commenting on this subject recently a chief engineer expressed co siderable doubt that even the most expert wood technologist could ma an intelligent estimate of the remaining life in a secondhand tie. Yet t railroads of the United States are using literally millions of such ties the basis of estimates of their remaining service life.

Among the railroads that are making large-scale use of salvaged t is the Baltimore & Ohio. In an article beginning on page 21 of this iss the B&O's chief engineer, J. A. Caywood, outlines the reasoning behi a program to reclaim and re-treat millions of such ties in the next ten yea

One of the more significant aspects of the B&O's practices is the fa that the system used to select the ties to be reclaimed for further u is such as to preclude the need for trying to decide the remainin service life in each tie. In place of more or less abstract judgment th road uses a set of "negative" specifications embodying eight rules cove ing defects that will disqualify a tie from further use. As Mr. Caywoo puts it, this system is "based on the premise that it is easier to sele ties that should not be reclaimed as opposed to those meeting minimu acceptable requirements."

The secondhand ties being used by the railroads are being reclaim and reinstalled in track at considerable cost. Every effort should be ma to assure that this money is being wisely spent. Any method that w eliminate guesswork in selecting the ties is a step in the right directi

NEWS ABOUT PEOPLE

C. Russell Riley
Baltimore & Ohio

Henry Seitz
Baltimore & Ohio

Albert L. Becker
Missouri Pacific

Richard N. Wagnon
Missouri-Kansas-Texas

BALTIMORE & OHIO—C. Russell Riley, general manager, Eastern region, at Baltimore, Md., and formerly chief engineer, has been promoted to special assistant to vice president operation and maintenance there. **Henry Seitz,** structural engineer at Baltimore, has been promoted to engineer of structures there, succeeding **Abram Clark** who retired on September 30 after 38 years of service.

In addition, the following changes have occurred recently:

John T. Hoelzer, engineer maintenance of way at Pittsburgh, Pa., to regional engineer, construction and maintenance, there; **Benjamin J. Johnson,** engineer maintenance of way at Cincinnati, Ohio, to regional engineer, construction and maintenance, there; **Frank J. Fico,** senior engineer at Baltimore, to assistant regional engineer, construction and maintenance, at Baltimore; **Milton S. Norris,** regional engineer at Pittsburgh, to assistant regional engineer there; **J. Edward Graham,** regional engineer at Cincinnati, to assistant regional engineer there; and **Robert E. Enderle,** division engineer at Akron, Ohio, to assistant superintendent of the Baltimore division.

CENTRAL OF GEORGIA—J. W. Lee has been appointed process superintendent-track at Macon, Ga., succeeding **J. C. Waldrop** whose promotion to division engineer at Columbus, Ga., was announced in the October issue.

FRISCO—G. C. Payne, assistant division engineer at Amory, Miss., has been promoted to division engineer at Enid, Okla.

LOUISVILLE & NASHVILLE—Irl Riggin, assistant engineer at Louisville, Ky., has been promoted to assistant division engineer at Evansville, Ind., succeeding **E. R. Englert** who has been promoted to cost control engineer at Louisville. Mr. Riggin is succeeded by **J. D. Hadley,** assistant division engineer at Louisville.

Howard C. Forman, assistant vice president-operations at Birmingham, Ala., and formerly chief engineer, has been promoted to assistant to the president, with headquarters at Louisville, Ky.

MILWAUKEE—P. C. White, assistant engineer at Deer Lodge, Mont., has been promoted to assistant division engineer at Savanna, Ill.

PENNSYLVANIA—C. D. Barefoot, assistant supervisor track at Pittsburgh, Pa., has been promoted to supervisor track at Logansport, Ind., succeeding **E. F. Schroeder** who has been transferred to Urbana, Ohio. Mr. Schroeder succeeds **J. C. Hunsberger** who has been transferred to Downingtown, Pa. **R. S. Bischoff,** junior engineer track, has been promoted to assistant supervisor track at Cresson, Ohio, succeeding **E. E. Robertson** who has been promoted to supervisor track at Marion, Ind. Mr. Robertson succeeds **R. L. Stuart** who has been transferred to Greenville, Ill., succeeding **B. A. MacLean** who has been transferred to Lancaster, Pa. **G. K. Tobey,** junior engineer track at Pittsburgh, has been promoted to assistant supervisor track there.

ROCK ISLAND—R. D. Simcoke, track supervisor at Eldon, Iowa, has been promoted to roadmaster at Cedar Rapids, Iowa, succeeding **O. E. Patten** who has been transferred to Fairbury, Neb. Mr. Patten succeeds **F. E. Long** who has been transferred to Trenton, Mo., succeeding **Noble Hurt.** Mr. Hurt has been transferred to Sayre, Okla., succeeding **P. P. Poulton,** resigned.

SANTA FE—Leon V. Lienhard, division engineer at Newton, Kan., retired on October 1 after 48 years of service.

SEABOARD—B. R. Moore has been appointed assistant engineer at Atlanta, Ga., succeeding **W. E. Billingsley** who has been transferred to Tampa, Fla.

SOUTHERN—Walter F. Tolley, Jr., track supervisor at Meridian, Miss., has been promoted to assistant division engineer at New Orleans, La. Mr. Tolley is succeeded by **Robert L. Andrews,** track supervisor at Laurel, Miss., who in turn is succeeded by **Garland D. Taylor. John H. Morris,** assistant bridge and building supervisor at Greenville, S. C., has been promoted to bridge and building supervisor at Charleston, S. C. **Carroll W. Sigmon,** division engineer at Asheville, N. C., retired recently after 47 years of service. **Luther J. Ivester,** assistant track supervisor at Charlotte, N. C., retired recently after 38 years of service.

SOUTHERN PACIFIC—Ralph E. Liggett has been appointed electronics engineer, with headquarters at West Oakland, Calif., succeeding **C. G. Kaehms** who has retired after more than 38 years of service. Mr. Liggett will report to the engineer maintenance of way and structures—system.

Obituary

Richard E. Dougherty, 81, retired vice president and assistant to the president of the New York Central and an engineer by training and experience, died on September 29 at White Plains, N. Y., after a brief illness. Mr. Dougherty retired in 1948 and had since been a consulting engineer with a New York firm.

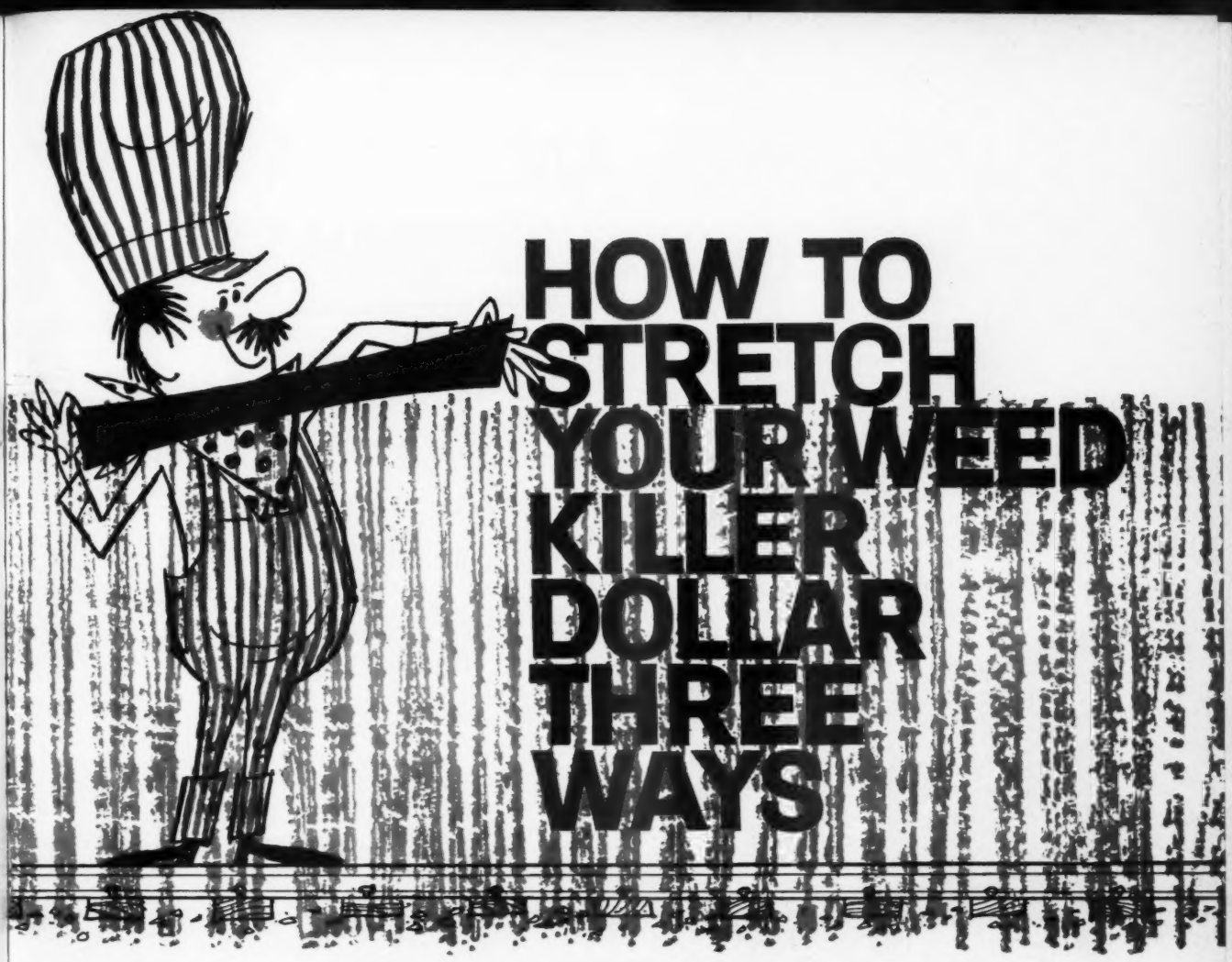
Biographical briefs

Albert L. Becker, 66, who recently retired as engineer of structures of the Missouri Pacific at St. Louis, Mo. (*RT&S*, June, p. 10), was born at Trieste, Austria, and received his higher education at the Imperial and Royal Nautical Academy in naval engineering. Mr. Becker commenced his railroad career in 1917 as a draftsman for the Southern Pacific at Houston, Tex., leaving this position two years later to accept a similar position with the Gulf Pipe Line Company at Houston. He joined the Gulf Coast Lines, now part of the MP, in 1919 as a draftsman at Houston, being promoted to assistant engineer there in 1925. Mr. Becker was further promoted to architect of the GCL at Houston two years later and advanced to architect of the MP at St. Louis in 1936. He was promoted to engineer of structures of the MP in 1948.

Richard N. Wagnon, 35, who was recently promoted to engineer of structures on the Missouri-Kansas-Texas at Denison, Tex. (*RT&S*, July, p. 10), was born at Dallas, Tex., and received his higher education at Southern Methodist University. Mr. Wagnon entered the service of the Katy in 1950 as a chainman and rodman as part of his training under the cooperative program of SMU. He was promoted to engineering assistant in June 1952 and to transitman five months later. Mr. Wagnon was further promoted to assistant office engineer in 1953, engineer-draftsman in 1954, transitman and inspector in 1955, assistant engineer-bridges in 1956 and assistant bridge engineer in 1957. He was advanced to bridge engineer at Denison in 1958, the position he held at the time of his recent promotion to engineer of structures.

LaRue S. Newman, 44, who was recently appointed assistant architect of the Frisco at Springfield, Mo. (*RT&S*, July, p. 10), was born at Stillwater, Okla., and received his higher education from Oklahoma Agricultural and Mechanical College. Mr. Newman entered the service of the Frisco in 1948 as senior architectural

(*Continued on page 47*)



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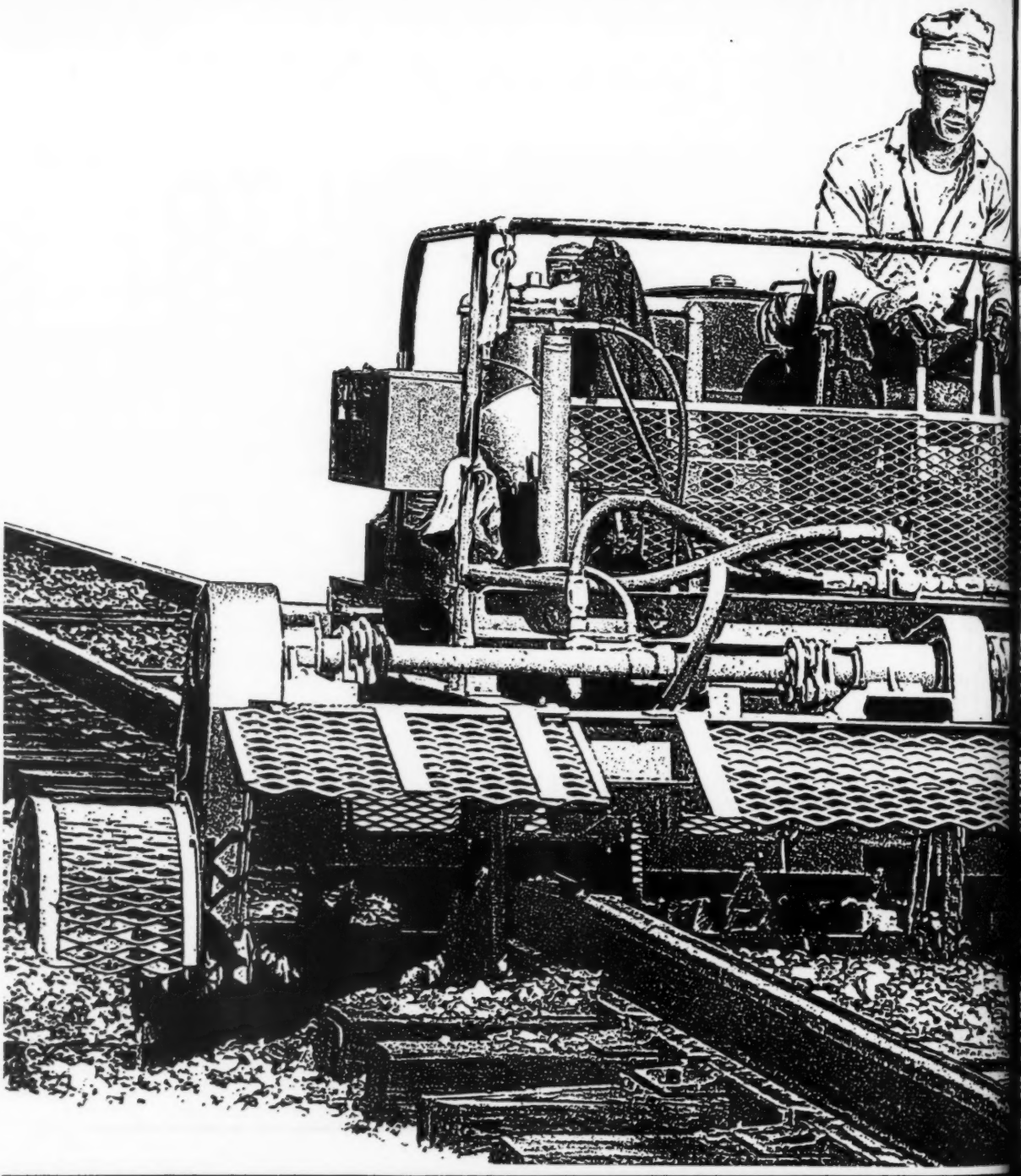

W84 SERIES B HYDRAULIC SPIKE PULLER lets one man work both sides of both rails, pull 15 to 20 spikes per minute.

UNDER RAIL DOZER, now available for Fairmont Tie Bed Scarifier, quickly loosens, moves compacted ballast from under rails.

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For speed, this machine with a single operator takes less than a minute to dig a 10-foot tie bed of uniform depth. Each bed is square with the rails, and extensions fit either end for easy tie insertion. For accurate control and smooth operation, hydraulic power drives the digging drums, raises the digging assembly, propels the machine . . . even permits a deadhead speed of 25 mph! Hydraulic power also operates the self-contained turntable for fast machine turn-around or set-off.

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Each W87 you provide for your tie renewal gangs can pay for itself in time and labor savings the first season! Call or write now for full information.

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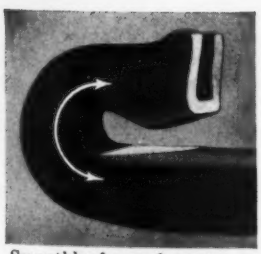

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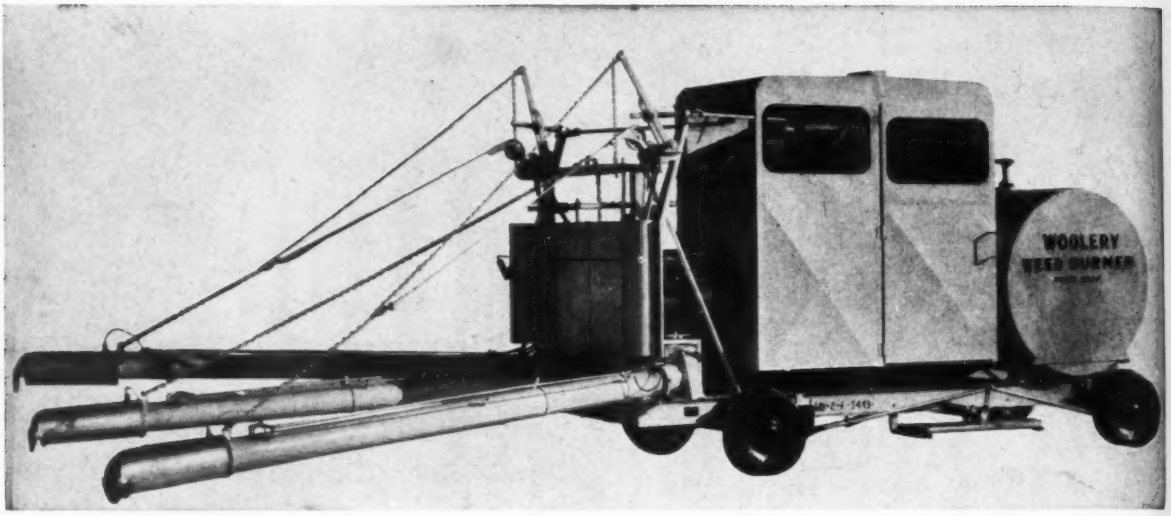

Separate Blower engine keeps heat at constant intensity when speed is reduced for clearing ice and snow from yards and switches

The model WB-2-F (illustrated) has automatic transmission with torque converter; constant blower speed regardless of rate of travel; an all steel cab with safety glass, two entirely separate brake systems and a final drive with chains and sprockets located outside the wheels for easy adjustment. A separate 15-H.P. air-cooled engine is used to drive the blower.

Other Woolery Burners include the Model COE which burns to a width of 25 feet using five burners, the PB-B 3 burner portable and the AB single burner portable.

Woolery also manufactures tie cutters, tie end removers, bolt tighteners, spike drivers, track tool transporters, motor cars and joint oilers. Literature and specifications on request.

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Railway TRACK and STRUCTURES

NOVEMBER 1961

Vol. 57, No. 11

AT PLANT salvaged ties are inspected, then spike holes are filled with untreated plugs. Ties then enter the production line.

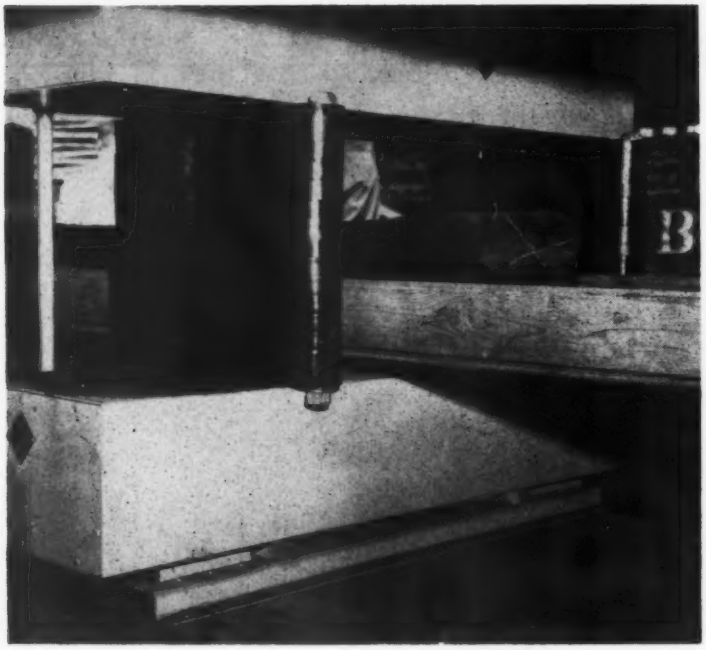
How B&O gets new life from old ties

By **J. A. Caywood,** Chief Engineer, Baltimore & Ohio

This road has embarked on a program to re-treat for further use a large proportion of the millions of crossties it plans to salvage from abandoned tracks during the next 10 years. The objective is more than to make the used tie perform like a new tie; it must also look like one. Reason: To overcome a "psychological block" on the part of the supervisor against the use of old-looking ties.

● Over the past quarter century the Baltimore & Ohio has maintained an average of 10,378 miles of track. The installation of CTC and abandonment of non-revenue producing lines will, over the next 10 years, result in the elimination of 2,000 to 2,500 miles of this track. In round figures, this means some 6,000,000 to 7,500,000 crossties of varying age will be available for such disposition as the company may choose to make.

Production line sequence ▶



1 Ties pass an electronic metal detector that locates broken spikes invisible to eye.

2 A three-angle, 150-lb water spray cleans the ties as they move on powered conveyor.

At plant ties are inspected, plugged, 'searched' for broken

To our knowledge, no information was, or is, available from experience on just what service life can be expected from re-used crosstie. Obviously, considering their age and condition, many of our ties are salvageable and many others are, for our purposes, worthless.

Because they can be corrected we ignored physical changes in the tie acquired in service, such as plate cuts, splitting, checking, spike holes, and ballast gouging. These changes certainly affect the looks of the ties but not necessarily their reusability.

Life assumed same as new ties

The assumption was made, perhaps optimistically, that, providing the wood is sound, the tie removed from track has the potential life of a new crosstie regardless of the age already acquired in service. No difference should be expected in the anticipated life of properly preserved, sound *new* wood and properly preserved, sound *old* wood. It is reasonable to assume, however, that a sound treated tie removed from its original track location is analogous to a sound treated utility pole removed and reused in a different location. The original life expectancy does not materialize in the displaced material. Taking a cue from this, we decided to retreat all sound ties recovered from track abandonment. We then went a step further and decided that, in addition to making the used tie perform like a new tie, we would make it look like one. Our brief experience in the way of refurbishing had convinced us that, in order to get not only proper use but, on occasions, any use at all, a psychological block on the part of the ultimate user had to be overcome.

The used tie received by the roadmaster from the abandonment area appeared to him no better than the ties he was removing in normal maintenance work from his own track area. In spite of instructions and stipulations pertaining to their installation, it was obvious that many sound, re-usable ties were finding their way into the burning pile after having been loaded possibly hundreds of miles away, hauled to the re-use location and unloaded. This made expensive firewood and was defeating our purpose. The slight additional expense to which we now go in giving this tie a new-tie appearance has been more than compensated for in their enthusiastic acceptance and total use on the B&O.

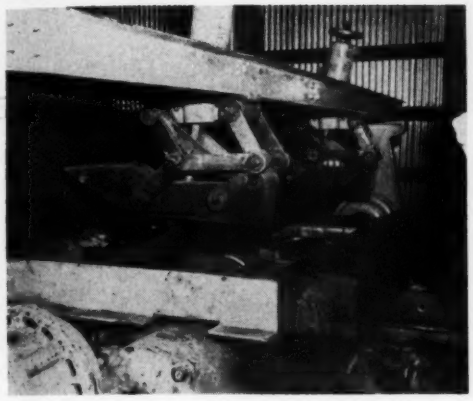
Management gives its approval to proceed with the abandonment of a specified number of miles of track. Generally speaking, this will be in a double-track area, permitting regular track equipment to be utilized in the demolishing work. A Power Jack raises the track slightly, loosening the ties from the ballast. Bolt machines, spike pullers, etc., loosen and disconnect the rails, bars and plates.

Use 'negative' specifications

Following their removal, a spotter marks those ties unfit for reclaiming. This is done by applying a set of negative specifications, based on the premise that it is easier to select ties that could *not* be reclaimed as opposed to those meeting minimum acceptable requirements. The eight rules used as a guide are: (1) Rail seat rotten within, (2) other evidence of internal or external rot, (3) 7-in tie—plate-cut over ¾ in with very rough back, (4) 6-in tie—plate-cut over ½ in with very rough back, (5) split half way through rail seat, (6) centerbound break, (7) badly shattered, and (8) deep checks—one-half depth of tie.

4 This view of ties on tram shows how they look as they come from the production line.

3 Variable-depth adzer cuts level seats for tie plates, eliminating any prior plate cuts.



spikes, washed, adzed and bored, then treated

Such ties are marked as unfit for reclaiming and are pulled from the roadbed for local disposal. A fork lift loads all remaining ties to open cars for shipment to the treating plant for reclamation. At present, this re-treating is being carried out by Koppers Company, Inc., Wood Preserving Division, at the Green Spring (Md.) plant of the Baltimore & Ohio.

On receipt at the plant, the ties are sling unloaded by a stiff-leg derrick to a roller ramp. Trained personnel give the ties a critical inspection for soundness and acceptability for re-use, marking unfit ties for kick-off. Untreated tie plugs are manually driven into spike holes. Moving on a powered conveyor, the ties pass a sensing device which detects broken spikes invisible to the eye. These spikes are driven below the adze cut. A 150-lb-pressure, three-angle jet water spray thoroughly cleans the tie as it moves to the adzing and boring mill. An automatic variable depth adzer permits cutting a level seat for the tie plate with a minimum loss of wood, eliminating in the process any prior plate cuts and, also, leveling the previously driven tie plugs. Ties are trammed for treating from the A & B outfeed. About eight per cent of the ties received at the treating plant are being dowelled.

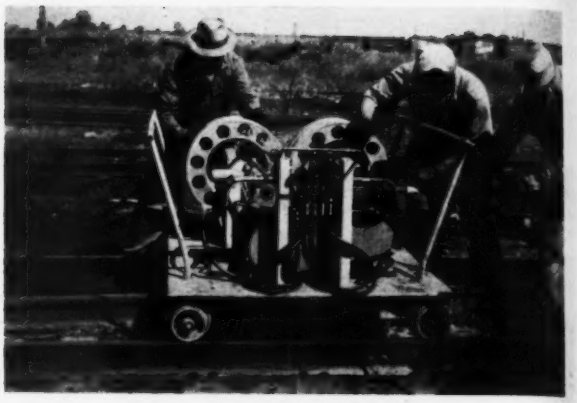
Method of treatment

Our decision in respect to preservative retention for the reclaimed ties is arbitrary since no assays have been run to determine preservative content of ties of known age removed from track. Several species of wood are represented and this consideration, coupled with the disparity in tie age, suggested that we adopt a standard treating schedule for all charges in the belief that the newer ties would take less preservative and the older would be more receptive. Our aim is an average retention of 4 lb of 70-30 creosote-coal tar solution per cubic foot of wood. We are obtaining slightly in excess of this on a 3-hour 20-min Rueping treatment cycle. Using initial air pressure of 90 psi, a preservative drop in temperature of 215 deg, an hour-and-a-half pressure period at 175 psi followed by an hour vacuum gives us the retention desired with good penetration.

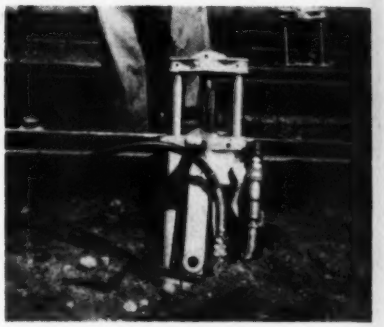
Recovery percentages of ties removed from track will vary considerably with different locations, but our experiences, to date, suggest that of the total number of ties in abandoned track from 60 per cent to 65 per cent will be reclaimed by the aforementioned process and at least 70 per cent of these will return to use in high-speed heavy-tonnage track. Presently, 30 per cent of our ties from abandonment are being disposed of along the right of way. That leaves 70 per cent being returned to the treating plant where about 10 per cent are being rejected. We expect to reduce this to 5 per cent by a more rigid field inspection. The plant rejects have so far been disposed of by local people. With the saturation of this market, we expect to hog the remainder and use for fuel.

This reclaiming program has its economic aspects. These will not be discussed here other than to state that our division engineers are more than pleased to get a tie which in appearance looks new, acts new when being installed, and, they believe, will perform like new. This tie is charged out to them at $1.25; the cost is actually slightly below this figure. The same grade new tie is charged to them at $4.22. Add to each an installation cost of $1.90 and arrive at whatever conclusion you wish. We like it.

FIRST STEP in using the hydraulic-jack unit to raise through a turnout is the digging of the jack holes.



MODEL RR400 has a separate reel for the hose to each jack. When moving the unit the jacks are carried on the car platform.



THE JACKS are placed in pairs, one on each side of the track, as shown here.

A practical way to accomplish more work between switching movements, when raising and surfacing busy yard tracks and leads, has been opened up by the development of a new multiple hydraulic-jack unit. Milwaukee trackmen, using this four-jack unit, report substantial savings through its use. A two-jack unit also has been developed for main-track use with a tamping jack for raising through turnouts.

Hydraulic jacks speed up track r

● In hydraulic track jacks, the Milwaukee Road believes it has found an answer to a troublesome yard-maintenance problem.

Switch leads require more resurfacing than most yard tracks. But they have so many switch engine and train movements over them that trackmen have but little track-occupancy time to do the necessary work. In general, on-track machines are not used for yard work to a great extent on the Milwaukee because it is felt they consume too much time in running back and forth to get out of the way of switching operations in the yard.

As a result, the leads must be raised by using hand jacks and hand tampers. But switching movements continue to hamper progress so that production is relatively small at the end of a day's work. Frequently, the men no sooner get their hand jacks in place and in a raised position, when they have to remove them to pass a train before any tamping can be done. By noon, the men are weary and work slows down.

Likewise, but to a lesser extent, the raising and surfacing of yard tracks is a troublesome problem. Frequently, yardmasters cannot take a track out of service long enough to enable the track forces to complete their work. As a result, the track forces must frequently revise their work schedules suddenly to take advantage of the hours such tracks are free from service. On such occasions, the number of men in the gang may not be adequate for the work on hand. Or, if adequate, a sudden cessation of the surfacing operation for one reason or another will result in a loss of working time until the men involved can be moved to some other job. All of which adds to the cost of and time for doing the work.

In discussing this problem, Milwaukee's principal assistant engineer, N. E. Smith, and terminal roadmaster, R. E. Palmer, decided that what was needed was a small track-mounted outfit which would employ hydraulic jacks for making a track raise quickly. With such jacks it would be possible to speed up the jacking operation, permitting more work to be done between switching movements. It was felt the unit should have enough power to raise through buried tracks, turnouts, railroad and highway crossings, and car retarders. They took their ideas to Templeton, Kenly & Co., Chicago, which company cooperated in the development of a self-contained, four-jack hydraulic outfit. A pilot model was built and tried out. The result is that an improved model, designated the RR400, has been

OPERATOR of machine actuates jack on line side by signals from foreman. Cross-level jack is elevated by use of track level.

TAMPING is done with a Jackson M-22A four-tool outfit. Track-lining devices (foreground) were used for lining turnout.

WORK was interrupted frequently on this enginehouse lead, but hydraulic jacks expedited the work between movements.

raising in yards

placed in production. This unit, along with a two-jack outfit, is described in the box on page 26.

How it is used

The Milwaukee Road, which purchased the first production model, uses the hydraulic-jack unit in conjunction with a Jackson M-22A four-tool tamping outfit. When raising a lead, the RR400 is placed on the curved rails of the turnout being raised so the foreman can have a clear sight of the spot board along the straight rail. Jack holes are dug at five points on each side of the turnout and, beginning at the switch-point end, the jacks are inserted in pairs. Each pair, it is said, can make a 9-in lift in less than 20 sec, it is reported.

The track is tamped up to the first pair of jacks, which are then moved ahead while the tamping progresses tie by tie to the second pair of jacks. The push-car outfit also is advanced on the turnout rails. This procedure is used instead of tamping up all of the raised ties at the jack points. The reasoning is that, if a train must be passed, part of the turnout tamping will be done. Otherwise, the jack ties would all have to be reraised to proper elevation and retamped after the passage of the train before any more tamping could be done. When an engine or train must be passed, the pressure is released on the hydraulic jacks. They are removed and placed on the push-car, which is then pushed into the clear on the side track or lifted from the rails.

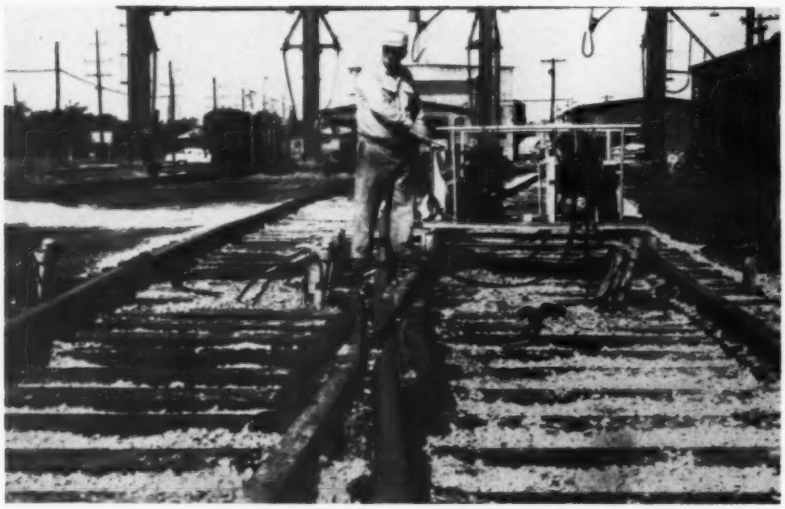
It is the opinion of Mr. Palmer and Mr. Smith that these jacks accomplish the work of about eight additional men each day they are used. This is due to the speed and ease in raising more track between trains.

In one instance a lead comprised of 18 turnouts, completely buried in the ballast, was raised and tamped under traffic in two days. Six men were employed in moving and setting the jacks and tamping ties at the jacking points. They were followed by a gang of 24 men changing out switch ties and surfacing, including the run-offs on the turnout sides.

On another occasion, a gang of 12 men raised and surfaced 12 switches of a coach-yard lead in two days, making a raise varying between 2 and 4 in. Four men of this gang set and moved the jacks and spot board while the others did the tamping. This work was interrupted 16 times by switching operations in the two-day period.

At its Bensenville classification

New jacks speed up track raising cont'd



TRACK-LINING devices were used in conjunction with the hydraulic jacks for shifting this turnout into true alinement. Note that one man controls all the jacks.

yard, the road reports that, when using the hydraulic-jack outfit, a car retarder was raised and surfaced by eight men in 1½ hr. This operation formerly required 20 men. The speed with the hydraulic jacks provided time to tamp the retarder before the next car was let down the hump.

In another instance at Bensenville, a turnout on an enginehouse lead was raised 3 in and surfaced by a foreman and 7 men in 1¾ hr. This turnout was embedded in oil-soaked-and-packed ballast. Being situated between an oil-fueling station and an engine-washing platform, the track work was interrupted many times to permit engines to pass.

On two occasions, Roadmaster Palmer had a track gang use the hydraulic jacks for lining turnouts. This was done in conjunction with three small track-lining devices. Mr. Palmer reports that the turnout was moved readily and lined quickly.

Main-track hydraulic unit

When the RR400 proved successful for raising yard tracks, consideration was given to the use of the same principle for raising and tamping turnouts in connection with main-track surfacing operations. The result was the development of the RR200, a two-jack hydraulic unit, mounted on a power tamping jack.

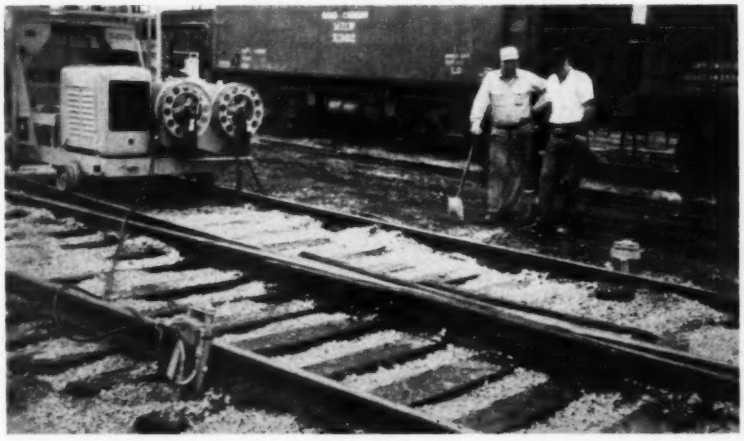
The Milwaukee Road experimented with one of these units mounted on a Kalamazoo Handyman. Mr. Smith reports the trials have convinced him that the RR200 can be used successfully with the road's small spotting or surfacing gangs for raising turnouts, including the run-offs on the turnout sides.

Hydraulic outfits are available in 4-jack and 2-jack models

The hydraulic-jack outfits, manufactured by Templeton, Kenly & Co., Chicago, are available in two production models. One, the RR400, is a four-jack unit designed for yard and terminal use. The other, the RR200, is a two-jack unit for main-track use in conjunction with a powered tamping jack.

Each jack is capable of lifting a 15-ton load, which is said to be more than sufficient for raising car retarders, as well as the most unyielding turnout buried in cemented ballast. The jacks are controlled individually, but all can be actuated at one time. Four bank-mounted, four-way valves control the lifting, lowering and holding action of the jacks. All valves are spring-loaded for return to center and they are designed to eliminate any jack drop-off. Each jack has a total lift of 9 in, this maximum being obtained in less than 20 sec. Each jack weighs 57 lb.

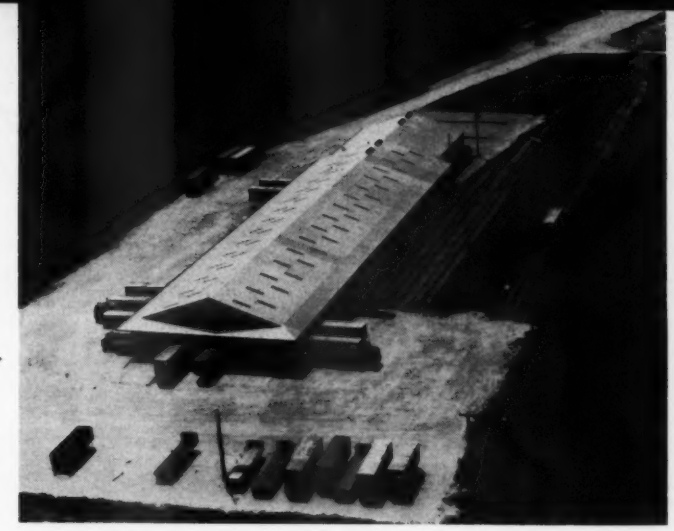
Model RR400 is a self-contained, push-car mounted unit. It is comprised of a 4½-hp Briggs & Stratton gasoline engine, a hydraulic pump, control valves, hydraulic hoses and reels, and the four hydraulic jacks. The jack hoses are 30 ft long but reel capacity is sufficient to permit these to be 50 ft long. A specially designed reel hub transmits the hydraulic fluid through the reel shafts to the jack hoses. The hydraulic pump generates a maximum pressure of 6,250 psi.



MODEL RR200 is shown here mounted on rear platform of tamping jack. The hydraulic jacks use power from the tamper when raising track through turnouts.

Model RR400 weighs 800 lb without the jacks. It presently is mounted on a push car having flanged wheels 6 in. in diameter. Later models will be equipped with 10-in diameter wheels and retractable lifting handles to facilitate moving the unit on and off the rails, and across tracks. Also, later models will have insulated axles and couplers for motor-car hauling.

Model RR200 utilizes a small high-pressure pump mounted on the oil reservoir of the tamping jack. The two hose reels are mounted flat against the rear end of the tamper. Each reel services one hydraulic jack, which also is carried in the rear of the tamper.



FREIGHT TERMINAL facilities include an 80-ft by 411-ft building, which is served by three tracks and has 40 trailer spots, a piggy-back loading ramp nearby (right foreground) and a truck garage (upper right).

To centralize operations at New Orleans, the SP decided to . . .

. . . Erect 5 pre-engineered buildings

● At Avondale, La., across the Mississippi river from New Orleans, the Southern Pacific has constructed five Armco pre-fabricated steel buildings. These buildings house operations which formerly were located at various places in or near New Orleans. The five buildings include:

- An 80-ft by 411-ft rigid-frame freight station, replacing facilities located in New Orleans.
- A 60-ft by 80-ft rigid-frame one-spot car repair building.
- A 60-ft by 128-ft rigid-frame truck garage and wash rack.
- A 16-ft by 52-ft gable-roofed telegraph office.
- A 49-ft by 66-ft flat-roofed office building, heated and air-conditioned, for the superintendent who formerly was located in downtown New Orleans.

The new freight-handling station has 19 bays, 60 plastic panels in the roof and a 10-ft wide Steelox-panel canopy over the dock areas. Forty trucks can be loaded or unloaded at the same time through door openings which are 11 ft high by 18 ft 8 in, 20 ft or 22 ft wide. Offices inside the structure are made with Steelox panels. A floor conveyor was provided to expedite the handling and transfer of freight. Four tracks are located outside of the building, three adjacent to one side and a fourth serving an end-loading ramp for piggyback traffic.

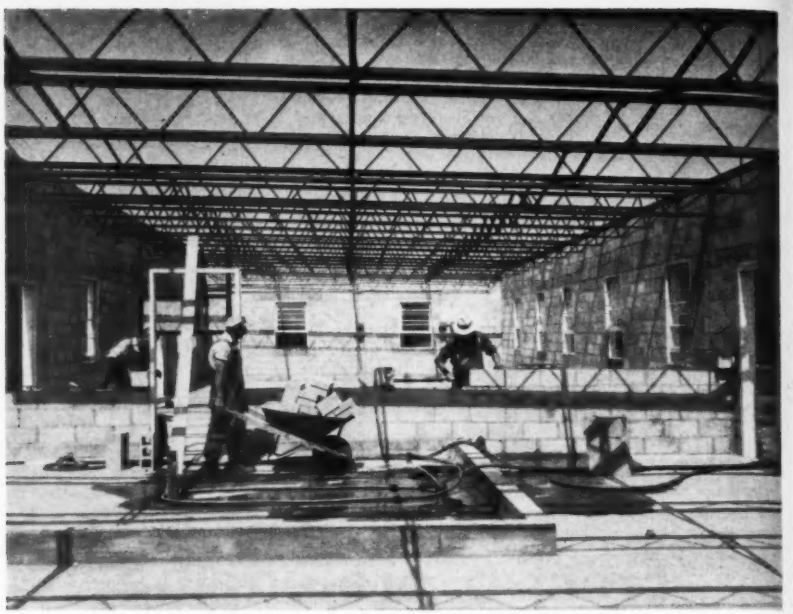
The truck garage and wash rack is located a short distance from the freight station and is equipped to handle both minor and major repairs. This building has Steelox sidewall panels and heat-reflecting Aluminized roof panels. Access is provided by five 11-ft high doors on either side. Steelox panels also are used for partitions in providing offices.

The structure housing the car-repair facilities has Aluminized steel panels in the roof and part of the sidewalls and has plastic skylights in each bay. Repairs are performed on two tracks, each equipped with pedestal-type cranes, jacks and power tools.

RIGID-FRAME structure housing freight station replaces facilities formerly located in New Orleans. It has 19 bays, 60 plastic panels in the roof, a 10-ft Steelox-panel canopy over dock areas and a floor conveyor.

ONE-SPOT car repair operations are housed in a 60-ft by 80-ft rigid-frame building which has heat-reflecting Aluminized panels in the roof and part of the sidewalls. This structure also has plastic panels in the roof.

- *Prices*
- *Inventory*
- *Labor Costs*
- *Pilferage*
- *Delivery*



How affected by local purchases and d

At the annual meeting of the American Railway Bridge & Building Association in September one of the committee reports presented dealt with the subject, "Inventory reduction by local purchase and delivery to job site by local supplier." Because of the widespread interest in this subject today the report is presented here in full. Chairman of the committee was R. D. Hellweg, assistant regional engineer, Gulf, Mobile & Ohio, Bloomington, Ill.

● "Inventory reduction by local purchase and delivery to job site by local supplier" is quite a controversial subject. Your committee received proof of this in the answers it has received to a questionnaire that was sent to railroad maintenance of way supervisory officials across the United States and Canada.

Your committee has endeavored to answer the following questions and problems in connection with supply of work materials which confronts us as we maintain our railroads with a minimum amount of money.

1. How do stores department prices plus handling, storage, loading and unloading compare to prices of local suppliers who can make job-site delivery?

2. Savings on reduced inventory.

3. Labor savings by line-of-road purchases in emergencies.

Taking the questions in their proper order, your committee will endeavor to give you the information it gleaned from the answers to questions propounded in its questionnaire.

1. Comparison of prices

Stores department prices, as such, are quite often not a realistic actual cost of materials delivered to the job site ready for use. We all know that our purchasing departments, when buying in quantities, can secure better prices, sometimes reduced or discounted by as much as 30 per cent, but we, as maintenance men, also know when our purchasing and stores departments do not cooperate 100 per cent with us on giving proper delivery dates to our work forces in the field. For this reason we are put to a large amount of extra labor in moving men about to unload materials.

Also, we, as maintenance of way men, probably do not have the best record in requesting proper delivery dates to the job site. All bridge and building supervisory forces must exercise extreme caution and good judgement in requesting delivery dates. Our bridge gangs can be held up because of an emergency and throw our time schedule off for an entire construction season, which, of course, can upset the most carefully laid plans. An emergency and poor cooperation in timing with our stores department can add considerably to the cost of materials, especially if it is necessary to move a gang to unload materials which are sent to the job site too soon for immediate use. Also, considerable expense is added to a project if materials are not delivered fast enough to keep a gang supplied at all times. We are sure that all of you present can recall where this has occurred on your road

Here are committee's conclusions

The committee arrived at the following conclusions on the three major points discussed in the report:

"1. Even though prices of material purchased locally for job-site delivery may be somewhat higher than the prices paid for materials to be handled through railroad stores departments, it appears from our questionnaire that a reduced number of handlings by purchasing from local suppliers for job-site delivery saves considerable labor costs and makes bridge and building carpenters available for more skilled work. Thus a saving is made due to the fact that more actual productive work can be performed.

"2. It appears as though savings are realized on a reduced inventory in many ways, primarily by actual cash conserved which can be used in various other phases of the industry, possibly to effect further savings.

"3. Again, it would appear that a saving in time for actual productive labor can be made by making purchases locally for job-site delivery while making emergency repairs.

"In summation, as shown by the results of our questionnaire, it would appear that a majority of our railroads are giving serious consideration to inventory reduction and to purchasing locally for job-site delivery."

delivery to job site?

to the extent that the labor involved in unloading materials and storing them at the job site has actually exceeded the original cost of materials. Also, you no doubt have seen gangs slowed up due to lack of proper materials.

Under present conditions we are sure that there is very little of this going on today as our bridge and building supervisors are keeping extremely close watch on all projects and they are exerting every effort to reduce lost time.

Another hidden cost to buying, handling and storing of materials prior to actual use is pilferage. Eighty-eight per cent of those answering your committee's questionnaire indicated that delivery to the job site immediately in advance of starting a project does reduce pilferage and damage in a sizable amount.

It is impossible to put down in black and white just what percentage should be applied to materials to cover this item, but it is one that exists and as long as we have materials stored on our right-of-way we will continue to suffer losses due to pilferage and vandalism, also damage due to the elements.

On a well-organized system it should be possible for a bridge and building supervisor to place requisitions well in advance of commencing work so that the purchasing department will be able to collect its orders and this, in turn, will give them the advantage of quantity buying. Conditions vary greatly on individual roads. It is obvious that small roads, of say less than 500 miles, probably have never bought bridge and building items in really large quantities, whereas larger roads, in excess of 1,000 miles of main line track, do not have as much delay in assembling orders which will place them in a position to buy in large quantities. Even though a road may be large or small, a definite saving can be effected by delivery to the job site only as needed, so that materials will not have to be handled more than is absolutely necessary.

It can be seen that materials purchased by our purchasing departments and handled through our stores department are handled several times by railroad personnel before they are actually delivered to the job site for use. Most railroads assess from 10 to 15 per cent of material cost to purchasing and stores' expense. Of those answering your committee's questionnaire 5.6 per cent stated that on their particular railroad stores' and purchasing expense was in excess of 15 per cent. However, even with this in mind, it can be seen that materials purchased in this manner can be bought at a saving when Purchasing can buy with a discount in excess of its operating expense. There is no question in your committee's opinion but what a saving in price of material can be made by buying in quantity, providing it is for use during one construction season only. Also, provided that the savings made by the purchasing and stores departments are not lost as soon as materials move away from stores. This saving can be dissipated in many ways, such as per diem on revenue cars which are kept under load for undue length of time, by labor for unloading, etc.

Materials purchased from local supplier for job-site delivery will not, except in rare cases of a large project near a source of supply, have the advantage of volume buying. Thus, the railroads will be required to pay regular retail prices. However, when retail prices are paid, the service that you as an individual would demand should be extended to the railroad. Anyone charged with the responsibility of making local purchases should see to it that the railroad gets its money's worth. In other words, delivery should be made free to the job site. Any damaged or defective material should be rejected. Delivery to the job site should mean that the material is unloaded and placed in a manner suitable to the progress of the project at hand. In this manner the bridge and building department on our railroads will not lose any construction time in the handling of materials. This can add immeasurably to actual production time.

Materials purchased locally can be delivered on request at specified times. Then there will be no loss from pilferage, vandalism or due to natural causes, such as storms, etc. Also, deliveries should coincide with progress of construction or repairs.

One thing appeared to be uniform in everyone's mind in connection with purchasing heavy bridge timbers when it came to the questionnaire. One hundred per cent of those answering stated that their company did not buy heavy bridge timbers locally. This would be almost impossible, except in a few specific areas,

as the materials involved just are not available locally.

Your committee would recommend that careful consideration be given to specifying delivery dates, as delivery at the wrong time can add heavily to the cost of handling materials in the field. When purchases are made locally it reduces the railroads' requirement for material cars which, in itself, contains many hidden costs. If your railroad still maintains camp cars, with material cars, it is necessary to maintain trackage at locations where it might otherwise be removed. If material was purchased locally it would be possible to reduce the number of cars required in these gangs. This cost, as small as it may seem, is just one of the many hidden costs of handling your own materials. For those railroads who have gone to bridge and building gangs housed in trailers, purchasing from local suppliers no doubt made it possible to simplify the requirements of such a gang.

2. Savings on reduced inventory

No doubt the biggest saving on reducing inventory is the initial reduction of cash outlay and the interest on this money, figured at not less than 6 per cent. When business fell off last year, many of our railroads found it necessary to reduce inventories. It was compulsory due to the lack of cash to maintain inventories as was the rule in the past. By reducing inventories, many savings have been made. In some unusual cases, monies have even been realized. This has been accomplished by locating industry in storehouses that had been vacated due to being caught in a squeeze of reducing inventories. Savings are realized in numerous ways, some of which are listed below.

Labor in handling materials is reduced when inventories are cut; paper work is reduced; fewer facilities are required. Closer supervision and control of individual bridge and building gangs is required when inventories are reduced, and this, in turn, promotes more efficiency in the individual gangs. Pilferage of stored materials is reduced. Damage to stored materials is reduced. Also, a reduced inventory sustained by local purchases with job-site delivery, will tend to eliminate substitution of materials by the purchasing department.

Savings made by a reduced inventory supplemented by local purchase and job-site delivery, even though not monetary, is made by creating good will and improved business relationship between the railroads and local suppliers, as well as whole communities.

A big saving can be made if a gang working on a job is called away to another project due to an emergency. This saving will be made due to the fact that a large amount of materials will not be on the job site, which would necessitate labor (possibly overtime labor) to store them until the gang would return to the original job. This saving can be accomplished by having materials furnished by local supplier only as needed.

Another advantage to the maintenance of way department by delivery to the job site is that our bridge and building gangs will have more time to turn out productive work—they will not be tied up unloading materials. This will let us get more skilled work from skilled employees such as are employed in our bridge and building gangs. This one item will add considerably to the amount of work which will be produced by an individual gang.

3. Labor savings by line-of-road purchases in emergencies

Labor savings by line-of-road purchases in emergencies encompasses such a large area in itself that your committee feels it should be restricted only to building materials for the purpose of this report.

Purchases in emergencies may run in size from a washer in a faucet to such large items as door and window sash, or even sheeting and siding. Any of you can visualize what happens when word comes in from an outlying station agent that he is being flooded out. His troubles may be only a leaky washer in a faucet, or it could be a tropical storm which is actually flooding the station. Regardless, you no doubt will dispatch a water service crew equipped with a modern truck and all equipment needed for routine maintenance. Upon arrival at the scene, they find that some special fitting has failed, and it is necessary to replace it. This not being a standard item on their truck, they must get into their truck, make a hurried trip back to the storeroom to pick one up, then return to the job site. Untold annual savings in labor could be made if such a crew were authorized to purchase locally in all similar occurrences.

Building damage of a small nature could be repaired by one or two carpenters if they were given authority to purchase materials locally for making repairs. This would eliminate an initial trip to the area to determine the amount of damage so that materials could be ordered, then returning again when materials for repairs were shipped to the site.

Answers to questionnaire

As a matter of information, your committee feels that the following data should be handed on to you in this report. The following material was secured from the questionnaire sent out by your committee. Ninety-one per cent of those answering the questionnaire indicated that a reduction has been made in stores stock of bridge and building material; this in the last five years in varying amounts which averaged out as follows: A 50 per cent reduction had been made in bridge materials; a 75 per cent reduction had been made in building materials. This, you can see, has made a tremendous reduction in cash layout.

Sixty-two per cent of those answering the questionnaire stated that their purchasing department buys bridge and building materials in amounts only as required by authorized projects. From this answer it can be presumed that the other 38 per cent of our railroads buy in volumes in excess of actually authorized projects.

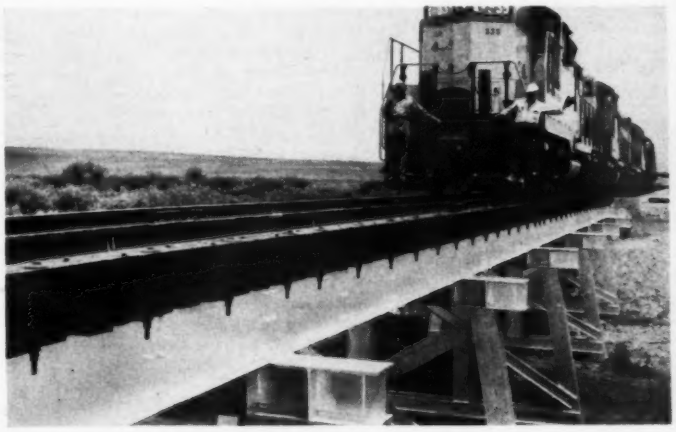
The question, "In your opinion is the price of materials purchased through the purchasing departments for delivery by local supplier to the job site higher than stores department prices which include handling, storage, loading, and unloading charges?" brought the following results: Yes—26 per cent. No—68 per cent. Questionable—6 per cent. From this it can be seen it is the general opinion of maintenance men that a saving will be made by purchasing locally with job-site delivery.

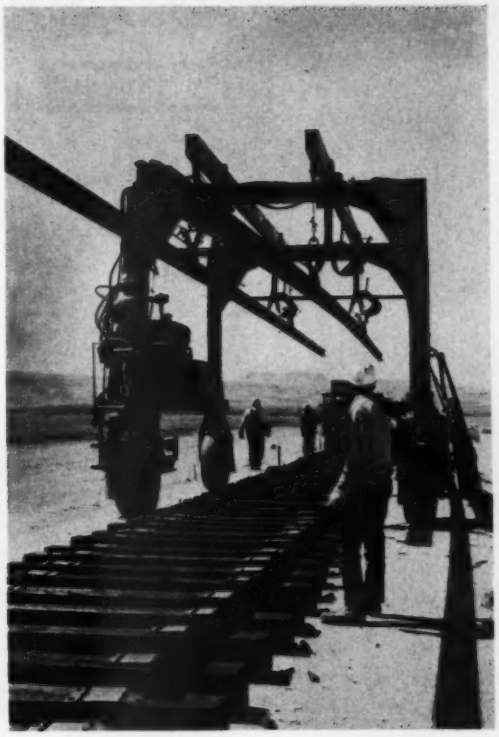
Ninety-four per cent of the an-

(Continued on page 51)

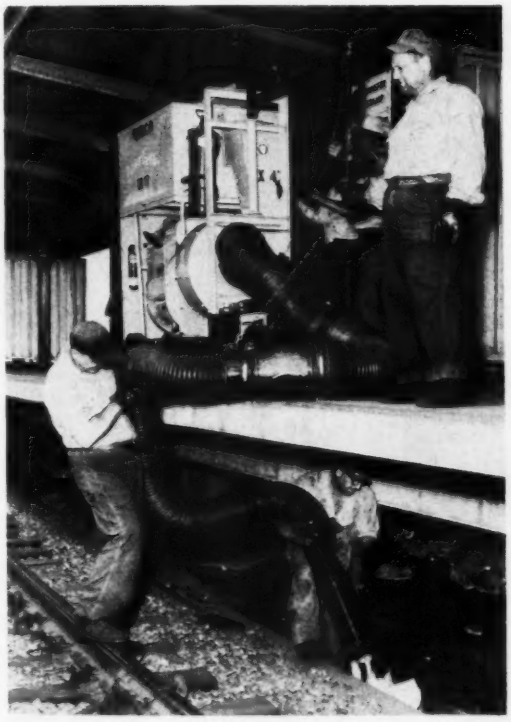
U. S. Steel constructs new line in Wyoming

A 77-mile industrial spur recently was completed by U. S. Steel's Columbia-Geneva Steel Division to tap a new taconite ore mine at Atlantic City, Wyo. It was constructed from the end of the Union Pacific's Winton branch line and extends over the Continental divide at historic South Pass. Designed by UP engineers to the road's main-line standards, modified to reflect special operating conditions, the new spur includes 39-ft, 132-lb rails, 10-deg maximum curvature and a test section of prestressed concrete ties. A huge Travelift straddle crane (right) was used to expedite track-laying operations. Structures on the new line include five steel bridges, four over rivers along the route and one over a state highway. The largest of these is the 120-ft welded-steel bridge over the Sweetwater river. This bridge is pictured below.



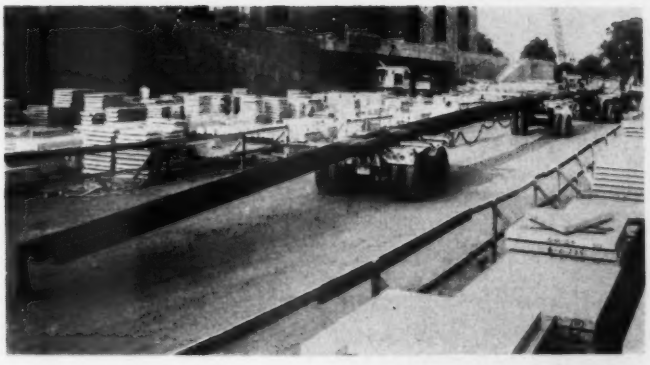


News briefs in pictures . . .



'Tidy' up with new vacuum cleaner

The Chicago Transit Authority is using a new 1800-lb vacuum-type litter-getter, known as "Tidy", to "police" station areas. The unit is powered by a gasoline engine and is mounted on rubber-tired wheels for mobility. It is reported that Tidy will suck paper, empty bottles and cans, etc., through its 10-in hose. Litter then is ground up and deposited into bags.



Museum gets 'Ribbonrail' for new exhibit

In a recent early morning move in Washington, D. C., four 142-ft long strings of "Ribbonrail" were delivered to the United States National Museum, a branch of the Smithsonian Institution. There, the rails will support a collection of historic cars and locomotives in the museum's land transportation exhibit. The rails are part of a cooperative presentation by the Bethlehem Steel Company, Linde Company, Division of Union Carbide Corp., and the Pennsylvania Railroad.

PRODUCTS

Improved design for . . .

Hydraulic jacks

SIMPLEX "Hydra-Toe" 15-ton toe-lift hydraulic jacks now are available in models which have been designed to completely eliminate cylinder scoring, previously the principal source of trouble in this type of jack, according to the manufacturer. The new units are equipped with an alloy steel bar which is suspended from the top between twin hydraulic cylinders. This bar rides in the jack's aluminum-alloy housing to prevent any wear from effecting the hydraulic system. The jack has a large heat-treated toe with machined grooves.

The new Hydra-Toe is available in a self-contained model, S-159, and a remote-controlled model, R-159. Model S-159 has both high and low-speed pumps. The remote-controlled model can be operated by either hand or powered gasoline, electric or air pumps. It is claimed that with sufficient reservoir capacity any number of jacks can be used instantly to pick up low loads and that a jack and a gasoline pump will lift 15 tons to a height of 9 in. in 12 sec. *Templeton, Kenly & Co., Dept. RTS, 2525 Gardner Road, Broadview, Ill.*

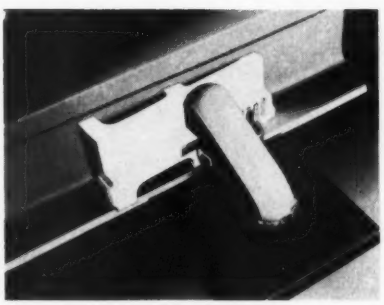
(Circle 200 on TIME-SAVER card, page 49)

Improvements made to . . .

Crane carrier

A NEW crane carrier is available which is equipped with hydraulically operated rail guide wheels to enable the vehicle to operate either on the highway or railroad track. Designated the Crane Carrier Corporation Model 1566, it is the first CCC road-rail carrier to employ the hydraulic principle. Previous models were equipped with mechanically operated units. *Crane Carrier Corporation, Subsidiary of Crane Carrier Industries, Inc., Dept. RTS, Tulsa, Okla.*

(Circle 201 on TIME-SAVER card, page 49)

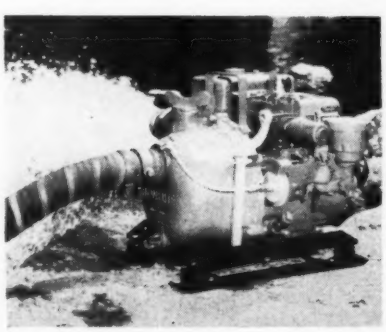


Adjustable spring for . . .

Rail brace

A NEW self-locking rail brace is available which is designed to be quickly tightened with a track maul or similar tool. The new unit consists of three parts —a cast steel wedge and back block and a high-tensile spring. It has no nuts, bolts or washers. The manufacturer states that the new adjustable spring brace permits accurate lateral adjustment of rails to maintain proper gage. *Taylor-Wharton Company, Division of Harsco Corporation, Dept. RTS, Cincinnati 12, Ohio.*

(Circle 202 on TIME-SAVER card, page 49)



Automatic control for . . .

Water pumps

HOMELITE portable pumps now can be equipped with a control for automatically idling the pump's engine when the water level drops below the suction-line strainer and bringing the engine back up to full speed when the water level rises. The new control is available for installation on Homelite's 2-in and 3-in, 2-cycle, engine-driven centrifugal pumps and its new 1½-in and 2-in, 4-cycle, engine-driven centrifugal pumps. Shown in photograph is the Model 44S2 9000-gpm pump.

The new idle control consists of a pressure-sensing tube, activating diaphragm (vacuum-sensing device) and throttle rod. The tube connects the diaphragm to the suction elbow of the pump. When water drops below the strainer and the vacuum in the line is lowered, the diaphragm relaxes causing the spring-loaded throttle to move to the idle position. When water again covers the strainer and the vacuum increases, the diaphragm pulls the throttle rod which brings the engine back up to full pumping speed. Advantages claimed for the control include reduction in fuel consumption, and reduction in maintenance costs. *Homelite, Dept. RTS, Port Chester, N. Y.*

(Circle 203 on TIME-SAVER card, page 49)

For switch plates . . .

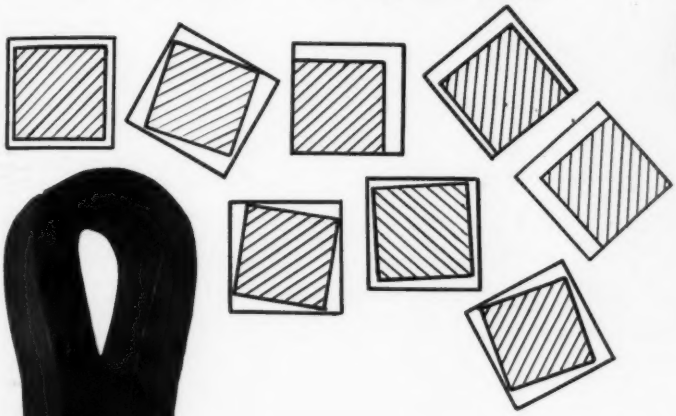
Dry lubricant

A NEW graphite dry lubricant is available for use on switch plates, springs, buffer assemblies, bridge pedestals, sliding-door channels, fifth wheels, cranes and large open gears. Designated "Dri-Slick," the lubricant can be applied by a brush directly from the 1-gal can in which it is packed. It requires no mixing or thinning and is said to dry to a hard slick finish in about 30 min after application. The manufacturer claims that the dry coating stands up under temperatures from -65 deg F to +800 deg F, cannot be squeezed out under heavy loads, does not attract dust and dirt, will not wash off the surface on which it is applied and is corrosion resistant. It is stated that if Dri-Slick is applied to plow and scraper blades snow and ice will not stick to those surfaces. *G. W. Smith & Sons, Inc., Dept. RTS, Dayton 32, Ohio.*

(Circle 204 on TIME-SAVER card, page 49)

(More products on page 52)

Troubled with loose fit of spikes in tie plate holes? . . . Plate cutting of ties . . . wave in the rail . . . Irregular gage?



TIE PLATE
LOCK SPIKE

The common ⅝" square shank cut spike may take any one of the various positions shown in cross-section at the line spike holes of the tie plate, which are scattered about this page. A reduction in size of the holes will not correct this trouble, as exhaustive tests of cut spikes in the smaller 11/16" square lag holes have proved.

Only LOCK SPIKES completely fill the holes by compression of the spread shank—firmly holding the plates to the ties under spring tension. Plate cutting is overcome—Rail is held to gage and line.

Rail Lock Spikes and Gage Lock Spikes are rail spikes as well as plate fastenings. Rail Lock Spikes also take up the play between the width of the rail base and the tie plate shoulders. The slight protrusion on the spike head at the tie plate surface binds against the edge of the rail base and forces the opposite shoulder into contact with the rail base. This action slightly skews the tie plates, as shown in the illustration below, and binds the rail at all four corners of the plate shoulders, as indicated by the arrows. Complete elimination of play in the spike holes of a tie plate and between the shoulders is accomplished.

GAGE
LOCK SPIKE

RAIL
LOCK SPIKE

BERNUTH, LEMBCKE CO., INC.
420 Lexington Avenue
New York 17, N. Y.

WHAT'S THE ANSWER?

Renewing ties under frogs

Where a few long ties have failed under a frog located in a turnout with tracks on each side, what should be done? Is there any easy way to renew these long ties? Explain.

No easy way

By R. E. PALMER
Roadmaster
Chicago, Milwaukee, St. Paul & Pacific
Chicago

I am sorry to say there is no easy way out of this. A few failed ties under a frog can soon cause the support of the frog to be such as to either bend or break the frog. In a short time you are confronted with a large expenditure for a new frog, many years in some cases before it should have failed.

As to the method of renewing ties under this condition, there are two ways to approach it. Where there is only one track or possibly two on the outside of the frog, you can dig between the track ties of the adjacent track and slide switch ties through. Otherwise it is necsesary to pull enough spikes so that the rails and frog can be jacked up high enough to pull the ties out over other tracks without doing any amount of digging below the bottom of the ties. Such digging will cause a soft spot under the ties and a pumping condition for a considerable length of time. This is almost as bad as having bad ties under the frog, except of course new ties would hold gage.

If the track can be taken out of service long enough for this work, this, of course, is the most desirable way. You can raise the rails and frog to pull the ties out, and this does the least damage to the roadbed of all tracks invlolved.

Use tie saw

By G. A. PEARSON
Roadmaster
Algoma Central & Hudson Bay
Sault Ste Marie, Ont.

Where a few long ties have failed under a frog in a turnout with tracks on each side, there is an easy way to renew these long ties. This is done by sawing the ties near the frog and inside of the rails with a suitable tie saw. The short pieces of ties can then be handled very easily.

If no suitable tie saw is available, it may be found necessary to remove the frog and one rail opposite the frog to get the long ties out of their beds. This prevents any disturbance of track surface at the location of the frog.

If, however, the frog or the entire turnout is found to be in need of lifting or surfacing, the jacking or digging method can be followed. However, this depends largely upon the height of lift desired in the turnout.

Digging in

By THOR MONROD
Section Foreman (Ret.)
Northern Pacific
Billings, Mont.

This condition would warrant some serious thoughts and planning. Some important factors to be taken in consideration are: (1) The importance of this turnout in relation to traffic. Is it on the main line or in a yard track? Can it be taken out of service while these renewals are made? (2) Its closeness to the adjacent tracks and whether they are a turnout, a switch or ordinary tracks.

I do not think there is any new machinery that can operate in such a place. The old system of hand digging we all know is not easy, and it requires a considerable length of time, which is not economical. I have run into similar conditions several times. I have used a method requiring the use of five or six track jacks which has made the job faster and easier. But it makes it necessary to either take this turnout out of serv-

NEW QUESTIONS to be answered in February

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you wish your name withheld, we'll gladly comply.

Deadline: December 29, 1961

• 1. What factors contribute to the failure of stock rails? Explain. Can any of these causes be eliminated? How?

• 2. A disadvantage in using steel forms when casting concrete is that more often than not the concrete surfaces show pits when the forms are stripped. What are the causes of this and how can they be eliminated? Explain.

• 3. Some railroads provide a wider than standard ballast shoulder on the outside of a curve. Does this extra ballast have any practical value? Explain.

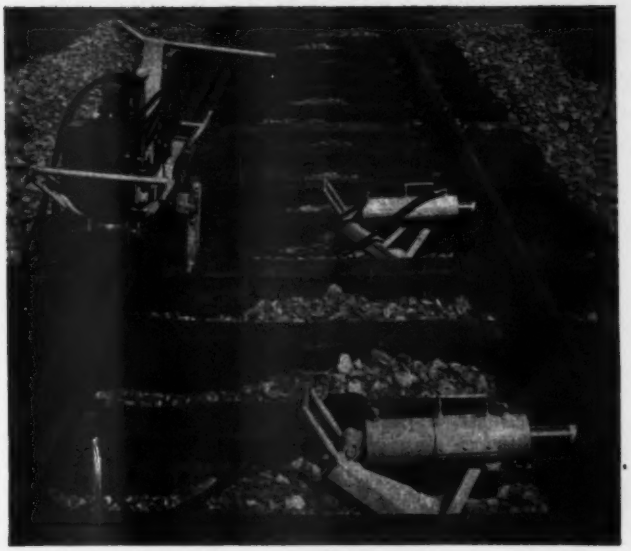
• 4. Frequently, when a bridge is to be redriven, it is found that old stubs from three or four previous drivings are still in the ground. Should the old stubs be extracted? If so, how? If not, what should be done? Explain.

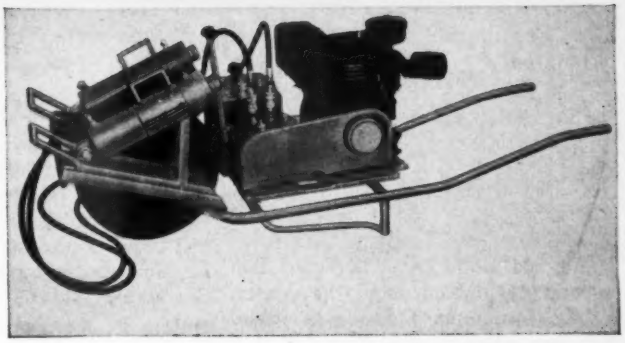
• 5. What considerations are involved in determining when rail should be cropped in the track or picked up and cropped at a central plant before relaying? Explain.

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.





Upper right—A compact, air-cooled 8 hp gasoline engine powers the two hydraulic rams on the Model P-O Hydraulic Track Liner.

Upper left—The double flanged track rollers on the Model P-O-A adjust to any height and weight of rail. Set-off wheels optional.

Lower right—Mounted on this wheelbarrow-type frame, the Model P-O is easily transported or moved into position by one man.

Lower left—The control valve is mounted on the cylinder of the Model S-P Hydraulic Spot Liner for quick, efficient one-man operation.

Line More Track Faster With Portable, Power-Driven RTW HYDRAULIC TRACK LINERS

Lightweight, heavy-duty RTW Hydraulic Track Liners make quick work of lining jobs that ordinarily call for big, heavy machines and large crews. Designed by railroad men to give small gangs large crew force, RTW Hydraulic Track Liners feature interchangeable units and high portability—a combination that lines more track per hour with less sweat . . . and at lower cost.

Model P-O Hydraulic Track Liner has a light, rigid and self-contained double flanged roller attachment that adjusts to any height and weight of rail. A compact, air-cooled 8 hp gasoline engine operates the two hydraulic rams that line thru switches and road crossings, powers the attachment for out-of-face linings. Available also mounted on a wheelbarrow-type frame for easy, one-man moving.

Model S-P Hydraulic Spot Liner has a collapsible outrigger and cylinder-carrying detachable dolly for quick portability. The ideal spot liner for small gang operation.

Find out more about lining more track per hour at lower cost with these two powerful, portable RTW Hydraulic Track Liners. Write today for complete details.

Sound color movie on track maintenance available on request.

TRACK MAINTENANCE MACHINERY

Switch Grinders • Cross Grinders • Surface Grinders
Rail Drills • Cross Cutters • Track Liners
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PRODUCTS RBI MEMBER

ice, if it is in a yard, or use flag protection if on main tracks.

The procedure is as follows: All materials and tools needed should be on hand. Get a good train line-up and notify the dispatcher if it is in mainline service, or the yard master if in yard service. Send out flagmen for protection. Pull all spikes or track fastenings from the failed ties and do the same on some adjoining ties for a short distance. Place one jack on the main-track side and raise the track 1 or 2 in above the failed ties. Next, do the same thing by placing two jacks, one on each side of frog and facing each other, and raise it sufficiently to permit the failed ties to be pulled out from under the frog. Next, use two or three jacks each side of the turnout rail, having first removed a sufficient number of spikes on each side of the failed ties. Raise the turnout rail high enough to permit the failed ties to be pulled out and passed over the top of rails of the adjacent track. In this manner all failed ties can be removed and new ties inserted. It would be well also to loosen the ballast alongside the failed ties before pulling them, as this makes it easier to pull them out.

The reason for pulling the spikes in the ties adjacent to the failed ties is that the surface of the switch will not be impaired or disturbed. If all preparations are done properly, it does not take very long to renew these ties. After all the new ties have been placed, drop all jacks and respike.

How to install a switch stand

The installation of a new switch stand and connecting rod on new headblock ties is an art. Describe step by step how this should be done.

Spike switch point

By Antoine Madere
Track Foreman
Humble, Esso Oil Refinery
Baton Rouge, La.

The front headblock tie should be under the point of switch and the second 21 in back from the center of the front one. This leaves 12 in between the inside edges of the headblocks for accommodating the width of the switch-stand base.

(1) Adjust the screw crank at the base of the stand spindle to 2¼ in from the inside face of the spindle to the center of the bolt hole for a 4-in throw of points.

(2) Attach the screw jaw end of the connecting rod to the screw crank, leaving about half of the threads inside the turnbuckle.

(3) The handle of the switch stand should be in such a position that throwing it will move the points away from the stand.

(4) Spike the near point of switch firmly to nearest stock rail.

(5) Attach the rigid end of the connecting rod to the front tie bar by inserting a bolt.

(6) Using a lining bar, push the stand away from the near rail to remove any slack in the connections, then spike the stand to the headblock ties. Use only one spike on each side as these may have to be removed when adjusting the screw crank.

(7) Remove the spike holding the switch point and operate the switch stand handle. Should both points fit properly at both stock rails, finish spiking the stand.

The following adjustments can be made if the points do not fit:

(1) When the near point fits properly against the stock rail and the far point throws too hard, shorten the throw and shorten the connecting rod.

(2) When the near point fits properly and far point does not throw far enough, lengthen the throw and the connecting rod.

(3) When the far point fits properly and near point throws too hard, shorten the throw and lengthen the connecting rod.

(4) When far point fits and the near point does not throw far enough, lengthen the throw and shorten the connecting rod.

(5) When both points throw too hard or are too loose, shorten or lengthen the throw without changing the length of the connecting rod.

(6) Tighten the jam nut of the connecting rod.

Has adjustments

By J. L. Devaney
Railroad Products Division
American Brake Shoe Company
Los Angeles, Calif.

The installation of new switch stand and connecting rod on a new headblock is very easily made if certain steps are followed.

(1) Set the switch points to half their throw, i.e., have the points set so the distance between the right-hand stock rail and the stock side of the right-hand switch point is equal to the distance between the left-hand stock rail and the stock side of the left-hand switch point.

(2) Bolt the connecting rod to the head rod and to the switch stand.

(3) Without disturbing the position of the switch points in relation to the stock rails, raise switch-stand handle to half-throw position.

(4) Spike stand to the headblocks. After spiking, a check is made by throwing the stand handle into either position, noting the position of points against the stock rail.

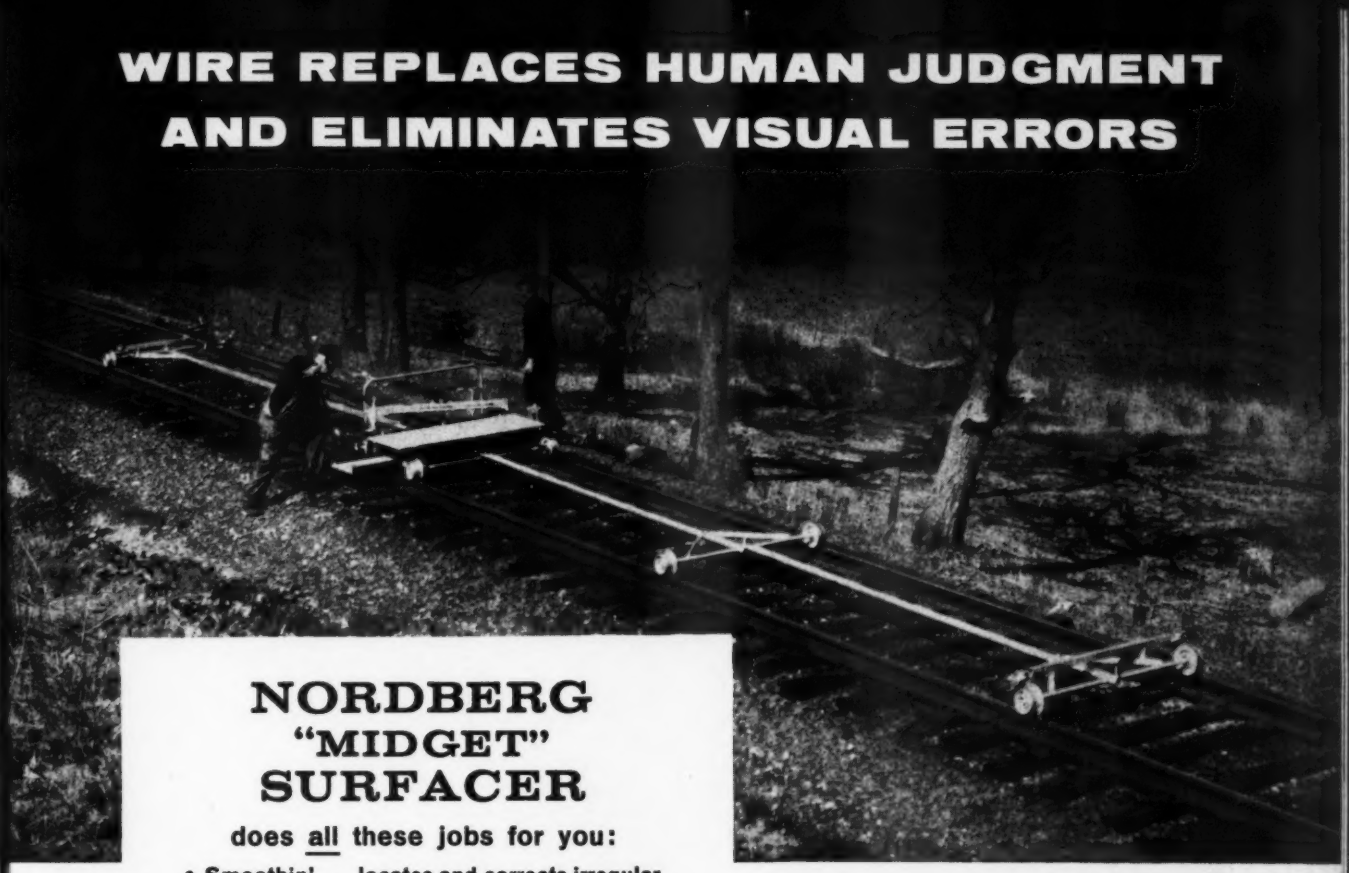
(5) Should the points remain open in both positions, the crank eye of the stand is screwed out to increase the throw of the stand, thus bringing the points tightly against the stock rail.

(6) Should the points close against the stock rail before the stand handle is in position for locking, the crank eye of the stand is then screwed in to reduce the throw of the stand.

(7) Should one point not close tightly against the stock rail with the stand thrown in one position and the opposite point is too tight against the other stock rail with the stand thrown in the opposite position, this indicates that the stand shifted during the spiking operation. This is easily rectified if an adjustable connecting rod is used. If the far point is open, lengthen the connecting rod the desired amount. If the close point is too loose, shorten the connecting rod. Repeat steps No. 5 or No. 6 to insure a good fit of the switch points against the stock rails.

(More answers on page 38)

WIRE REPLACES HUMAN JUDGMENT AND ELIMINATES VISUAL ERRORS



NORDBERG "MIDGET" SURFACER

does all these jobs for you:

- **Smoothin' . . . locates and corrects irregular surface.**
- **Locates and corrects minor surface irregularities after jacking and before tamping in a track raising operation.**
- **Locates and corrects settlement irregularities following ballasting of high lifts.**
- **Analyzes the quality of track surface.**

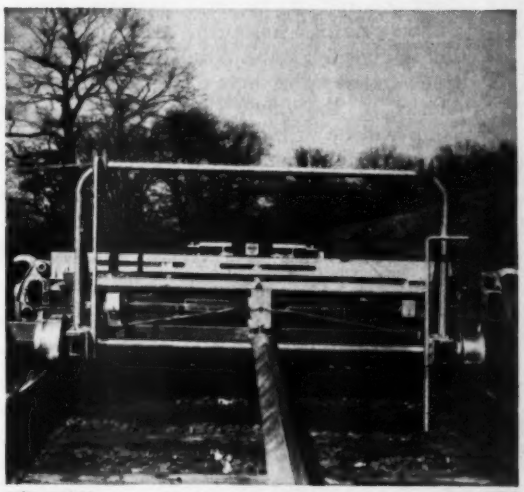
(Above): Nordberg "Midget" Surfacer in use, with the 4-wheel carriage and the three 2-wheel buggies connected by coupling tubes, around which the wire is stretched.

(Below): Carriage on a curve and pointers on "zero." Note hand jacks on platforms and one of the two retaining brakes being used to hold the "Midget" on a grade.

The Nordberg "Midget" Surfacer eliminates human error and guesswork by utilizing a 50-ft. length of tautly drawn wire over each rail to locate and correct low spots in track surface. It is made up of a 4-wheel carriage and three 2-wheel buggies. Two pointers are employed, one for each rail. One end of each pointer is in constant contact with its wire, and the other end moves over a graduated scale which is mounted on the carriage over the center of the track.

As the lightweight "Midget" is pushed along the track, the two pointers are observed. If the surface is perfect, these pointers will constantly indicate "zero" on the pointer scale. As low spots are encountered in either rail, the individual pointer will move below "zero". In this way, each rail is analyzed independently of the other.

When a low spot is found, the "Midget" is moved back and forth to locate the lowest point, and a hand jack is then inserted at this spot and used to lift the track until the pointer reading is corrected. A tie adjacent to the hand jack is tamped manually to hold this correction. Suitable tamping means are then employed to tamp all ties at the corrected spot.



Write for complete information.

NORDBERG MANUFACTURING COMPANY
MILWAUKEE 1, WISCONSIN

What's the answer? (cont'd)

Lists 10 steps

By A. N. Turnquist
Extra Gang Foreman
Baltimore & Ohio
Mt. Jewett, Pa.

To install a new switch stand and connecting rod on new headblock ties, proceed as follows:

(1) Have headblocks properly tamped and correctly spaced to allow sufficient clearance for the crank pin of the switch stand so it will not rub on sides of headblocks.

(2) Place switch stand on headblocks with the connecting rod parallel to the No. 1 headblock. The connecting rod should be straight from the switch stand to the No. 1 switch rod.

(3) Have all adjustments in the switch stand on center (that is half way). Also, if the connecting rod has an adjustment, that should be on center also. This will make it simpler to adjust the switch.

(4) Connect switch-stand connecting rod to the No. 1 switch rod and to the switch stand.

(5) Spread the switch points an equal distance from both stock rails. (Example, if the switch has a 5-in throw, open each point 2½ in.)

(6) With the switch stand, connecting rod and switch rod all connected, the points spread an equal distance, and the switch-stand handle or lever in a half-throw position, line the switch stand parallel to the track and at right angle to the headblocks so that switch target and lamp will be in full view of anyone approaching from either direction when thrown for either main or siding.

(7) Drive one spike through switch stand base in each headblock.

(8) Throw switch and note if the switch is too tight on one side or too loose on the other. With adjustments at half way, the switch stand won't need too much adjustment either way. If the switch stand has too little throw, an adjustment can be made by turning the crank pin outward. If the stand has too much throw, an adjustment can be made by turning the crank pin inward.

Some stands have steel shims inside of them for adjusting the throw of the points. These shims are generally held in place by a bolt on each side of the crank pin. By loosening these bolts, the shims can be moved from one side to the other to make the correct adjustment. The bolts then should be tightened.

Some stands have an adjustable connecting rod which can be lengthened or shortened by turning a clevis in or out, whichever way it has to go to make the correct adjustment.

(9) Finish spiking the switch stand in full, and again check the adjustments. See that all switch bolts in the switch rods and connecting rod are tight and have cotter keys.

(10) Spike down the switch-lever keepers or latches. When spiking these, see that each keeper hugs the side of the lever away from the track. In this way the keeper will have more holding surface over the top of the switch lever.

On some switch stands the keeper is an integral part of the stand. The handle of the stand is usually connected to it so that, when the switch is fully thrown, the keeper with the handle attached drops into an opening with square sides. This holds the points in place.

A stand of this type has to have either a switch lock or a hook of some kind to prevent the handle of the switch stand from coming up.

Gives seven steps

By R. J. Paolise
Supervisor, Track T6
New York City Transit Authority
Jackson Heights, N. Y.

(1) Standard switch throw must be maintained.

(2) One-half the thread length of eye screw is screwed into the spindle and also the end of the connecting rod. Threads must be at halfway point.

(3) Connect the switch stand to the connecting rod.

(4) Open both switch points and equalize the throw of the normal and reverse points, i.e., if the standard throw is 4 in, then both points must be open 2 in.

(5) Raise switch handle upright and hold at 90-deg angle.

(6) Measure distance from outside base of stock rail to the switch stand. The distance must be equal on both sides of the stand.

(7) Spike switch stand taking precaution that spikes are driven straight.

Although it has been about 30 years since I installed a switch stand on the New York Central, as I recall it, if done in the above manner nine times out of ten the switch is automatically adjusted to proper working order in both the normal and reverse points.

Measuring tunnel clearances

How do you measure the clearances of tunnels on tangent track? On curved track? What other methods can be used? Explain. What equipment or instruments are required?

Clearance car

By E. H. Scheid
Clearance Engineer
New York Central System
New York

We have given this subject considerable study and, after having tried various measuring methods, we have come to the conclusion that the only accurate way to obtain the necessary data is with a clearance car. We designed such a car about 20 years ago and, with improvements and refinements, use this car at present to obtain all data.

Our clearance car is a remodeled standard coach and is self-propelled. A vertical steel plate is erected above the king pin of the forward truck. It is surrounded by 120 hinged wooden feelers, held to proper tension by means of springs. As the car slowly moves through a structure or tunnel, the feelers are pushed back so that the minimum outline of the structure is indicated by the resulting position of these feelers.

In the steel plate is a large pantograph. One arm of this pantograph is now brought into contact with each displaced feeler. A smaller pantograph attached to one arm of the large pantograph transfers the position of the feeler to chart paper at a scale of 1 in = 1 ft 0 in. In this

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way we obtain the minimum outline of all structures accurately.

As the plate is erected over the center of the truck, no middle ordinate is involved on a curve. Through a series of jacks and wedges, the spring action and side play of the car is eliminated and our data are correct from the center line of track at right angles to the plane of rails.

Normally, our feelers are set to measure (check) everything less than 7 ft 6 in from the center line, and 18 ft above top of rail. To check structures from 18 ft to 20 ft above top of rail, the upper portion of the steel plate can be raised electrically.

We have found that this car produces accurate data, and we feel that this is the only way such accuracy can be secured.

Permanent record

By S. W. George
Division Engineer
Western Maryland
Cumberland, Md.

All clearances on this property, including tunnels, truss and through-plate-girder bridges, overhead bridges, cuts and structures, are measured by a specially constructed "clearance" or "finger" car. This method compensates for the super-elevation on curves and the resulting measurements are parallel to the plane of the top of rail from a center line which is normal to this plane.

The clearance car consists primarily of a flat car with a frame mounted over the center of the leading truck. This location for the frame eliminates errors caused by middle ordinate or overhang which would result if located in the middle or at the end of the car. On the frame is mounted a series of fingers, or steel arms, pivoted to move parallel to the track. A graduated arc at the base of the finger records the additional distance from the pivot point to the obstruction which caused the finger to rotate. The distance, center of car to pivot point, is uniform. Fingers are arranged to record both overhead and side clearance.

The arms fully extended record the standard single-track tunnel clearance. Any deflection is recorded, and the location noted. All obstructions close to the track are measured; those beyond the arms are measured by extending a survey level rod along the arm and recording the distance. The records are then compiled and placed on a drawing covering approximately 20 miles of railroad. Any load, whether high or wide, loaded in any manner on any type car can be investigated to determine if it will clear on any particular territory and what restrictions, if any, are required.

In tunnels and under bridges, top-of-rail elevation is noted and marked in the concrete or timber. Future surfacing operations must be performed without raising the track above the indicated elevation marker. Since the entire system was covered by the clearance car, additional measurements are not necessary. New construction is permitted only if it conforms to or exceeds the standard minimum clearance. Once constructed, it is plotted on the appropriate sheet and becomes a part of the record.

Rod and protractor

By T. O. Monaghan
District Engineer
Spokane, Portland & Seattle
Portland, Ore.

We have 26 tunnels on our system ranging in length from 122 ft to half a mile. Twenty of them are all or partly on curved track and some of them are through solid rock without lining. In 1949, after completion of a program of reballasting, lengthening easement curves, and increasing the elevation on curves, the clearances of all tunnels on the system were rechecked and diagrams were prepared for each cross section taken. At places where the clearance is close, check measurements have been made since 1949.

In taking measurements in the field the center line of track was used as a base line for horizontal control and the top of rail (low rail on curves) was used as a base line for elevations. A visual inspection of the tunnel, using lights, was made for the purpose of locating points at which close clearance was indicated, and these points were marked on the track. Those portions of the tunnel at which the clearance appeared to be standard or better were measured at regular intervals of 50 to 100 ft. For heights of about 6 ft above top of rail, vertical and horizontal measurements were taken directly and plotted on cross-section paper in the field.

For measurements above 6 ft, a comparatively simple instrument was used which consisted of a telescoping graduated rod. This was set on a steel pin driven into a tie in the center of the track to the elevation of the low rail. A large protractor, having a radius of 18 in and graduated in 30-min increments, was mounted on the rod at right angles to the track center line with a plumb bob suspended at its center.

Measurements were then taken around the perimeter of the tunnel bore by extending the rod to any desired point in the tunnel walls and roof. The length of rod was read directly, and the angle from vertical was read on the protractor as indicated by the vertical plumb-bob string. These distances and angles were plotted as taken, resulting in a finished cross section of the tunnel at each station.

The above method is handy to use in areas where traffic is heavy for the reason that little time is lost, as would be the case if a high-car or other device, which would obstruct the track, were used. It can be improved upon by painting a reference line along the walls of the tunnel for use as a base, instead of using the track which can shift in position. Periodic checks could then be made which would require only checking the position of the track with the reference line, rather than measuring the entire tunnel each time.

Telescopic pole

By C. F. Intlekofer
Assistant Bridge Engineer
Great Northern
Seattle, Wash.

We have several methods for measuring tunnel clearance on tangent track. The simplest method is the use of a pole to hoist the end of a tape to the arch of the tunnel and making the measurement to a straight edge laid across the top of rails. A plumb bob is held alongside the tape to make certain that it is vertical. The measurement, of course, is made from the roof of the tunnel to the bottom of straight edge, which is the top-of-rail elevation. Horizontal measurements are made from the center line of track to the various

What's the answer? (cont'd)

points on the straight edge where the tape is held for the vertical measurements. These two measurements —vertical and horizontal—permit the plotting of the various points of the tunnel roof on cross-section paper or clearance diagram.

Location of the sidewalls is determined by measuring horizontally in the plane of the top of rails from the center line of track to the sidewalls. All horizontal measurements are made from the centerline of track and all vertical measurements from the plane of top of rails.

If the tunnel in which clearances are to be measured is long, or if the interior surface of the tunnel is irregular, a scaffold, about 7 ft from the top of the tunnel arch, permits a man to readily hold the end of tape on the tunnel roof. The lower end is held on the straight edge on top of rails as noted above.

Some railroads have a clearance measuring device mounted on a push car or on a converted flat or baggage car. The device consists of numerous "fingers" which are held in a frame and project toward the tunnel walls and arch. These fingers are deflected when they meet an obstruction and the clearance data is recorded on a chart by a recording device or by observers riding on the car.

All of the above methods for measuring clearances in tunnels on tangent track may be used on curved track. On superelevated track, the vertical clearance measurement is made with the straight edge resting on the high rail and leveled with a carpenter's level. The superelevation also is measured at the point where the vertical clearance measurements are taken and the track station or location in the tunnel is recorded. If a "clearance car" or measuring device mounted on a car is used on curved track it takes into consideration the superelevation of the track because the body of the car mounted on wheels slopes with the track.

The equipment required for measuring tunnel clearances includes steel tapes, a pole about 20 ft long (this may be telescoping and made of aluminum), a push car with a scaffold built on it, or a "clearance car" with mounted clearance-measuring device.

(Please turn to page 44)

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Vehicular damage to steel span

If a high truck load strikes a short (25-ft) girder span over a highway and causes the lower flange of the main girder to buckle upwards 3 in over a length of 3 ft near the center of the span, and also tears the 7/8-in flange at one end as far back as the toe of the main angle, should traffic be barred from this span or be allowed to pass under a slow order? What is the best method for repairing this damage? Explain.

Frequent occurrence

By J. L. Beckel
Engineer of Structures
New York Central
New York

The question of damage to an overhead railroad bridge by a high truck load is timely and of interest because of the frequency of such occurrences. We have had a number of incidents causing damage to our structures, although the damage was more extensive than that outlined in your question.

A complete discussion cannot be given unless some assumptions are made to supplement the information given in regard to the girder span. First, let me assume that the spans are of modern design and stressed to 18,000 psi under dead, live and impact loading. Under these conditions, if the outstanding leg of one bottom flange angle of the girder is torn through, I would permit ordinary railroad loading to pass over the structure at a restricted speed of 5 mph.

The incident you describe would more likely occur at a structure of more ancient vintage which probably was designed for E-40 loading or less, and stressed under present-day traffic to 22,000 to 24,000 psi. The damage to the bottom flange angle of such a structure would result in high stresses under normal railroad loading. Under such circumstances, I would not permit traffic over the structure until a supporting bent had been placed under the span to

strengthen it for train traffic.

The method of repair normally would be to remove the damaged portions of the flange angle and replace in kind, splicing with a new angle to the existing flange with splice plates or splice angles and using high-strength bolts for the new connections. Where the damage is of such a character, and if good structural welders are available to the railroad, it would be possible to heat and realign the bent portion of the flange angle and butt weld the angle where it has been torn through.

Use splice plate

By C. W. Gabrio
Engineer of Structures
Norfolk & Western
Roanoke, Va.

From your description of the damage to the lower flange of the girder near the center of the span, it appears to me that about 11 per cent of the net flange area has been lost. Providing the current traffic did not overstress the bridge subsequent to the accident, the loss in flange area would increase the unit tensile stress to about 22,000 psi, which I do not consider too close to the elastic limit.

Also, I assume that the remaining portion of the flange which has buckled upwards has not been fractured. This being true, I would not hesitate to allow traffic to pass, under a slow order, over this span until it could be repaired. Consideration should also be given to the fact that there is generally less stress produced in the girders by the use of diesel locomotives than was formerly produced by steam locomotives.

In repairing the girder, I would heat the bottom flange and attempt to straighten the buckled portion as much as possible. Because the bottom flange is in tension, I believe a splice plate should be welded in the bosom of the flange angle to compensate for the area lost. This plate should extend a sufficient distance on either side of the tear to develop the plate. I do not believe it would be feasible to weld the splice plate on the underside of the flange, as it would encroach on the underclearance which, it is apparent, is already close.

(Please turn the page)

Carrying out track inspection today

The adoption of mechanized district gangs requires someone to make track inspections. Who should do this work? What should be his qualifications and how is he qualified? What should he look for? Should he do any corrective work himself? Explain.

Section foreman rank

By D. H. YAZELL
Assistant Engineer
Illinois Central
Chicago

The adoption of mechanized district gangs or long sections has made it imperative that someone inspect track at regular intervals. One method is to create a special position of track inspector who is required to make regular assigned inspection trips on a light inspection motor car.

The qualifications of this man should be similar to those of a section foreman. It is obvious that a man familiar with the track structure, etc., be assigned to this position. It is, therefore, logical that these positions be filled from ranks of section foremen or other equally qualified personnel.

He can make frequent and detailed inspection of all turnouts, check elevation in curves, and observe the condition of rail and joints, the general condition of ties, line and surface, and the condition of highway grade crossings, including sight protection for motorists. He should be watchful for swinging ties, soft spots and any other conditions which may need correction. He should, of course, inspect passing trains.

Any corrective work would of necessity have to be of a type that one man can accomplish safely, such as replacing bolts and making minor adjustments to switches consistent with safety. Any corrective work, such as removing joint bars, etc., which would leave track in an unsafe condition, should not be attempted by one man. He should make daily reports of all conditions noted.

Needs track chart

By A. N. Turnquist
Extra Gang Foreman
Baltimore & Ohio
Mt. Jewett, Pa.

The adoption of mechanized gangs requires someone to make track inspections. The person to make these inspections should be a qualified section foreman, or an extra foreman well versed in the maintenance of track.

He should have a good knowledge of the district under his jurisdiction, and a blue print or chart showing the superelevations and run-offs of all curves of the track that he is to inspect.

He should be qualified physically and also on the maintenance-of-way rules and regulations.

He should look for irregularities in line and surface, excessive wear of rail, track out of gage, and defective rails, such as head-and-web separation and vertical split heads. He should inspect culverts and also look over cuts for loose rocks and slides.

He should look for excessive running of rail where rail anchors are few or not holding, so as not to have any buckled track in hot weather.

He should inspect switches, frogs, highway crossings, etc., and report all findings to his superiors.

With a light inspection car and a trackman or two he would be able to adjust switches, repair insulated joints, and replace broken joint ties, broken angle bars and loose track bolts.

Biographical briefs

(Continued from page 12)

draftsman at Springfield, being promoted to building manager at St. Louis, Mo., in 1952. In 1953 he was appointed architect of the Missouri-Kansas-Texas at Denison, Tex. Mr. Newman returned to the Frisco as assistant architect on June 1 of this year.

L. L. Whetzel, 24, who was recently promoted to assistant engineer of structures on the Missouri-Kansas-Texas at Denison, Tex. (*RT&S*, July, p. 10), was born at Parsons, Kan., and received his higher education at Parsons Junior College and through a correspondence course in structural engineering. He entered the service of the Katy in 1957 as a chainman at Parsons. Mr. Whetzel was promoted to draftsman at Denison in 1958 anl architectural draftsman in 1959. He was serving in the latter capacity at the time of his recent promotion to the position of assistant engineer of structures.

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103. Improved Fair Rail Anchor—Points out features of anchor and advantages of its use. (Page 8)

104. "Ribbonrail" Service—Offers information on process for making continuous welded rail. (Page 11)

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112. Auto-Spiker—Automatically feeds spikes to each of four guns on RMC SpikeMaster. (Page 17)

113. Channelee Rail Anchors—U-shaped unit is formed from bar of uniform thickness. (Page 18)

114. Woolery "Snowsender"—Has second engine to drive blower at constant speed. (Page 20)

115. Lock Spike—Different versions are offered as hold-down, rail and gage spikes. (Page 33)

116. Model P-O Hydraulic Track Liner—Says unit gives small gang large crew force. (Page 35)

117. Model S-P Hydraulic Spot Liner—Cylinder is carried on detachable dolly. (Page 35)

118. Nordberg "Midget" Surfacer—Wire device for analyzing quality of track surface. (Page 37)

119. Texaco 904 Roll-Lubricator Grease—Says grease pumps uniformly in heat or cold. (Page 39)

120. Chipman Weed Control Service—Points out services available to railroads. (Page 41)

121. CampCars—Says highway-type units pay for themselves in about a year. (Page 44)

122. Racine Rail Drill and Saw—Cuts rail and drills three holes simultaneously. (Page 45)

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124. Aeroquip Hose Assemblies—Explains how these units aided production on large job. (Page 47)

125. Model 441 Speed Swing—Illustrates unit in action and lists attachments available. (Page 48)

126. Big-Boy Conversion Units—Mounts on most trucks with gross weight under 48,000 lb. (Page 51)

127. Special Big-Boy Conversion Unit—For units having on-rail weights up to 72,000 lb. (Page 51)

128. Gautier Rail Anchor—Applied by hand or machine. Says anchor cannot be overdriven. (Page 52)

129. Mannix Auto-Track—Describes operation of this track rehabilitation equipment. (Page 53)

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131. TPC Setoffs—Portable units can be set up ready for operation by two men in 10 min. (Page 55)

132. Wisconsin Model V-460D Engine—Compact air-cooled unit weighs only 521 lb. (Page 55)

133. In-Place Treatment of Timber—Offers service for prolonging life of wood bridges. (Page 56)

134. TW Rail Brace—New self-locking adjustable brace consists of three parts. (Page 57)

135. Tool and Supply Car—Tubular steel unit weighs 140 lb. and has a capacity of 2000 lb. (Page 57)

136. Model 40 Burro Crane Ditcher—Has long digging radius for ditching and loading cars. (Page 58)

137. M&S Rail Lubricator—All moving parts of unit are self-lubricated. (Inside back cover)

138. M&S Rail Anchor—One-piece unit is made from spring-steel bars. (Inside back cover)

139. M&S Switch-Point Protector—Unit is installed by means of clip bolts. (Inside back cover)

140. Urox Weed and Brush Killer—Can be mixed with fuel, diesel or ordinary weed oils. (Back cover)

141. Urab Weed Killer—Says material is completely soluble in oils or water. (Back cover)

Free literature offered in advertisements

142. Lubrication Guide—Gulf Oil offers 88-page illustrated booklet on the lubrication and maintenance of engines, wire rope and earth-moving equipment. Railroad men will find information very helpful. (Page 6)

143. Supervisory Training—Offers folder describing home-study course for railroad men. (Page 42)

144. Motrac Railroad Radio—Has completely transistorized receiver, power supply. (Page 43)

145. Rail Lubricator—American Car & Foundry Div. will send literature on its M&S grease-type lubricator. Also on its M&S one-piece rail anchor (No. 146 on card), and M&S switch-point protector (No. 147). (Inside back cover)

Other free literature offered by manufacturers

148. Earth Augers—Points out features of air-powered earth boring unit. *Kwik-Mix Company*

149. Concrete Mixes—Pocket-sized folder entitled "Proper Mixes and Quantities of Materials for Small Concrete Jobs" is available. It includes examples on how to estimate amount of materials required. *Portland Cement Association*

150. Rail-Welding Process—New 8-page bulletin describes and illustrates the Exoweld method, which uses a self-contained kit. Advantages of the process are given. *Exomet, Inc.*

151. Railroad Coatings—New folder describes corrosion-prevention, fire retardant coatings. *DeSoto Chemical Coatings Co.*

Items described in Product Section

200. Simplex Hydraulic Jacks—Improved design for Hydra-Toe 15-ton jacks. (Page 32)

201. Model 1566 Crane Carrier—Is equipped with hydraulically operated guide wheels. (Page 32)

202. TW Rail Brace—Self-locking adjustable units can be tightened with track maul. (Page 32)

203. Homelite Water Pumps—Now are equipped with automatic idling control. (Page 32)

204. Dry Lubricant—For use on switch plates, springs, bridge pedestals, etc. (Page 32)

205. Schroeder Hydraulic Tester—Portable unit for finding trouble in hydraulic systems. (Page 52)

206. Power Hammer—Delivers 2500 blows per min. for chipping rust or driving anchors. (Page 52)

207. Portable Weed Sprayer—Handgun unit for spraying invert-type herbicides. (Page 52)

208. Water Coolers—Units have plastic liners. Available in 2, 3, 5, 10-gal sizes. (Page 53)

209. "Adepox" Adhesive—Reinforced-resin adhesive for bonding masonry. (Page 53)

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To the editor

Thinks our September issue was 'one of the best'

Milwaukee, Wis.

TO THE EDITOR:

Perhaps I am prejudiced because we are well represented in the issue but to me the September issue of Track and Structures is one of the best you have had for some time. I have not read all of it yet but the articles all seem to be on good solid timely subjects. Also, your "What's the answer?" column has a number of quite lengthy but pertinent answers from people of considerable stature on their lines.

As an advertiser, it is quite important to us not only to know who our customers are who read a magazine in which we advertise, but it is equally important for us to know that they read it, use it, and are interested in it. Your "What's the answer?" section is, to me, good evidence of the interest your readers have in your publication.

I think our two-page spread on pages 16 and 17 is one of the best and eye-catching ads our people have come up with in a long time. I hope you agree.

W. B. Blix
Vice President
Railway Equipment Division
Nordberg Manufacturing Company

Calls attention to error in article on concrete ties

Weston, Ont.

TO THE EDITOR:

I read with great interest your "Progress report" on concrete ties in the United States and Canada in the September issue. One small error appeared to have slipped in the description of the RS tie. You state that the "base dimensions of the blocks are 11½ in by 20 in." The correct dimensions are 11½ in by 29½ in.

J. L. Harmsen, P. Eng.
Wm. C. Duncan Limited

Local purchases

(Continued from page 30)

swers to another question indicates that it also is the general opinion that local suppliers can deliver materials to the job site quicker than our own railroad facilities can. Also interesting is the fact that 47 per cent of those answering the questionnaire indicated that bridge and building employees are presently purchasing building supplies locally without purchasing department approval.

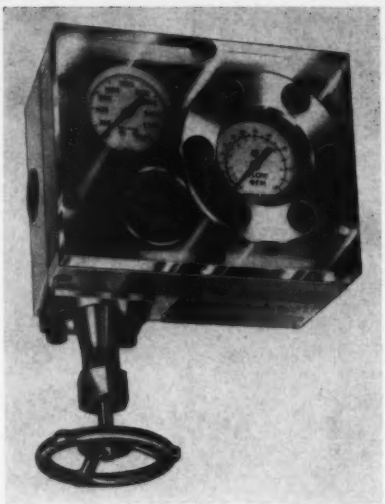
The most interesting question propounded and its answers, in the opin-

Local purchases (cont'd)

ion of your committee is, "Would you, as an official of your railroad, recommend that bridge and building materials be delivered to the job site by purchase from local suppliers?" The answers: Yes—82 per cent. No—15 per cent. Undecided—3 per cent.

Again from this it can be readily seen that the majority of the maintenance of way officials on our railroads feel that substantial savings can be made by purchases which specify job-site delivery.

We would like to point out that this report has been written with the express exclusion of heavy bridge timbers, which includes treated bridge members. This type of bridge material was not included in this report as the type of material does not lend itself to being available to local suppliers for job-site delivery.



low and high gpm ranges. The pressure gauge indicates loads up to 3000 psi and the temperature gauge records from 20 to 240 deg. A high-strength aluminum block, measuring 5 in by 6 in by 8 in, serves as case and manifold for gauge porting and mounting. *Schroeder Brothers Corporation, Dept. RTS, McKees Rocks, Pa.*

(Circle 205 on TIME-SAVER card, page 49)

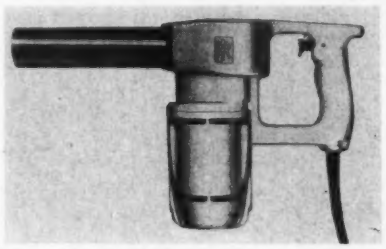
Products

(Continued from page 32)

For pinpointing trouble . . .

Hydraulic tester

HYDRAULIC system problems, it is said, can be pinpointed in a matter of minutes by using a compact, low-cost, portable instrument designated the Hydra-Sleuth. Weighing about 20 lb, this instrument is for on-the-job use in finding hydraulic trouble in systems operating up to 3000 psi. It incorporates flow, pressure and temperature gauges and a load-valve for use in any position on hydraulic equipment. The flow gauge reads directly in gallons per minute, with two scale ranges: 0 to 10 gpm, and 6 to 30 gpm. The scale is said to be calibrated for easy reading in both



Drill and chip with . . .

Power hammer

DELIVERING about 2500 blows per minute, the new Ingersoll-Rand Model H541U electric power hammer can be used for roughing and breaking up concrete, chipping scale, rust or weld spatter, driving self-drilling anchors, pointing up stonework and peening rivets. Weighing 11⅝ lb without the cable and 12¾ lb with the cable, the unit is 15¾ in long, 8 13/16 in high and ⅞ in side to center at the barrel. It will take drills up to 1⅛ in. in diameter.

The motor is rated at 5.0 amp and operates on standard 115-v ac or dc current. The nylon trigger actuates an enclosed, unit-construction switch which is designed to keep dirt out. Features claimed for the Model H541U include induction-hardened helical gears for quiet operation and a counter-balanced crank assembly for smooth operation. Extra accessories include special drills and chisels, carrying case, tool retainer, dust shield, drill adapter, adapter handle, handle sleeve and drift. *Ingersoll-Rand Company, Dept. RTS, 11 Broadway, New York 4.*

(Circle 206 on TIME-SAVER card, page 49)

Apply invert herbicide . . .

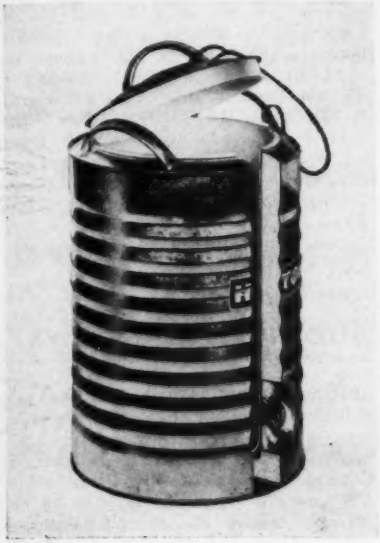
Portable weed sprayer

A PORTABLE hand-gun spray unit for applying invert-type herbicide for brush and weed control has been developed, and is said to project a spray up to 50 ft.

The unit weighs approximately 100 lb and may be transported and operated from a pick-up truck without anchoring. It is powered by a 7½-hp air-cooled gas engine which pumps water from one drum and a special chemical formula from another to a nozzle where the components are intimately mixed to form a water-in-oil emulsion. This emulsion is a mixture of water, non-aromatic oil and herbicide to which a surface-active agent, an emulsifier and sticking agent have been added. Dual

triggers on the hand-spray unit have self-locking devices for obtaining a constant spray. The manufacturer states that pinpoint accuracy of the mayonnaise-like spray eliminates the possibility of drift. *Stull Chemical Company, Dept. RTS, 3400 Nacogdoches Road, San Antonio, Tex.*

(Circle 207 on TIME-SAVER card, page 49)



New plastic liners for . . .

Water coolers

AVAILABLE in 2, 3, 5 and 10-gal sizes, a new line of Horton water coolers has been introduced in which the units are equipped with plastic liners. The outer wall of the coolers consists of galvanized corrugated steel to which lightweight urethane foam insulation has been applied on the inside. The new plastic liner for holding liquids is seamless and is made from high-density polyethylene. The liner is equipped with a recessed spigot, also made of molded plastic. The spigot is replaceable and eliminates heat transfer from within the cooler. Advantages claimed for the new liner include better sanitation, freedom from taste or odors, high temperature resistance and replaceability. In addition, plastic-lined coolers are stated to be over 20 per cent lighter than metal-lined coolers and to be twice as efficient in maintaining hot or cold liquids. A lid retainer rope is provided. *Horton Products, Inc., Dept. RTS, Memphis 18, Tenn.*

(Circle 208 on TIME-SAVER card, page 49)

●

Bond masonry with . . .

New adhesive

A NEW reinforced-resin adhesive, known as Adopox, is available for bonding granite, limestone, marble and other decorative material to the facades of buildings. Adopox is a two-part thixotropic compound which incorporates a new polymer, known as Structoweld, to provide high bonding power. The manufacturer states that the material is capable of filling ½-in

Products (cont'd)

to 1½-in gaps between decorative material and concrete or brick walls without sagging and that the balanced resiliency of Adopox makes it compatible with a wide variety of materials having different coefficients of expansion.

The new adhesive has a recommended working pot life of 2 hr and can be applied in the field by a trowel. Installations can be made in any climate and in damp, humid weather, according to the manufacturer. It is claimed that granite blocks are held firmly in place within 4 hr after the adhesive is applied. Bonds made with Adopox are stated to be strong, resilient and chemical resistant. *Adhesive Products Corporation, Dept. RTS, 1600 Boone Ave., New York 60.*

(Circle 209 on TIME-SAVER card, page 49)

Supply trade news

AEROQUIP CORPORATION—O. L. Adkins, railroad sales engineer at Chicago, has been promoted to products manager, railroad sales, with headquarters remaining at Chicago. In his new position, Mr. Adkins will continue to supervise sales of the Marman line of clamps and Flexmaster pipe couplings and, in addition, will supervise sales for all other Aeroquip railroad products, including the automatic fueling unit, flexible hose lines with detachable, reusable fittings and self-sealing couplings.

WILLIAM E. GADD—Mr. Gadd has opened offices at 575 Main St., Chatham, N. J., for the purpose of serving the railroad supply industry as sales engineer and consultant. Mr. Gadd formerly was vice president of the Rail Joint Company. He also has served as manager of the Vapor-Drying process of Taylor-Colquitt Company and assistant to the president of the American Creosoting Company.

SILENT HOIST & CRANE CO.—Edwin G. Holl has been appointed railroad sales representative for the Philadelphia district.

Obituary

John S. Penney, 71, president of the T. J. Moss Tie Company, St. Louis, Mo., died suddenly on September 19. Mr. Penney was born at St. Louis and graduated from Westminster College in 1912. Since that time he has been connected with the wood-preserving industry, serving

Classified Advertisement

THE FULL STORY OF A TPC SET-OFF

PATENTED

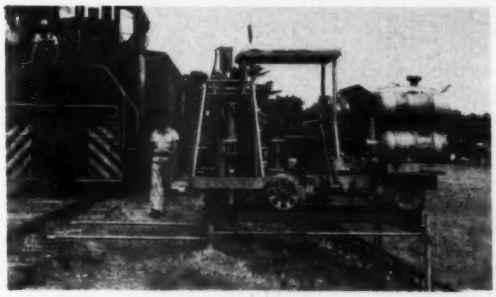
Shown here is the complete set off operation.

The TPC Set-Off is sturdy, reliable, and has been proven through years of service by many major railroads.

Not shown here is the portability and ease with which the TPC Set-Off is placed into operation. It takes 2 men only 10 minutes to set the set-off ready to receive the maintenance of way machines.

Take a good look at this time and labor saving set-off and write for further information.

BEFORE



AFTER

TRANSPORT PRODUCTS CORPORATION

3008 MAGAZINE ST. **LOUISVILLE 11, KENTUCKY**

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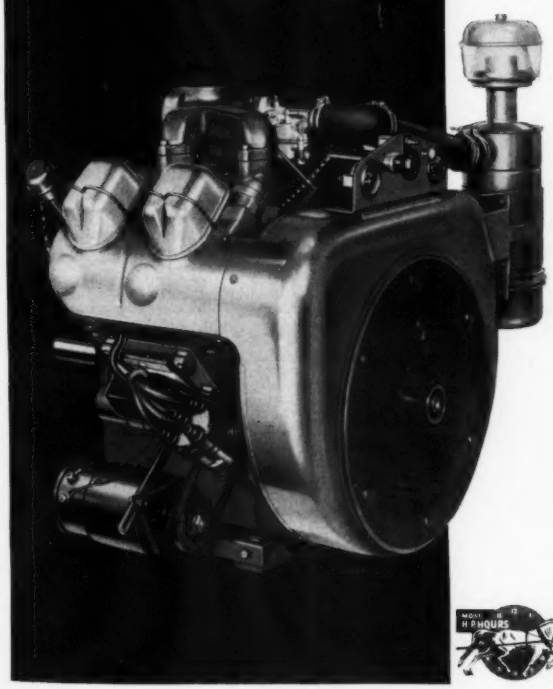
introducing industry's most compact 60-hp heavy-duty air-cooled engine



NEW 60-HP WISCONSIN MODEL V-460D WITH VALVE-IN-HEAD DESIGN

The new and amazingly compact air-cooled V-4 is precision-built for trouble-free operation in severe applications. And it's designed to save you money as soon as you specify it for your mechanized m/w equipment or operation.

Weighing only 521 lbs., the new V-460D requires less structural steel to support it. Thus you can get equipment that is lighter and easier to handle — has greater payload and work capacity — and costs less to own, operate, and maintain.

Valve-in-head design and higher compression bring you greater fuel economy with *regular* gasoline. They provide cooler and more efficient engine performance and simplify upkeep.

A center main roller bearing and tapered roller main end bearings absorb all thrusts. Stellite-faced exhaust valves and positive rotators *extend valve life up to 500%!* Other long-life features include controlled pressurized lubrication, high-temperature safety switch, and added air-cleaner protection. Electric starting is standard.

Check out all the benefits the V-460D offers you. Then specify it for your m/w equipment or operation requiring dependable power up to 60 hp. Send for free Engine Bulletin S-282. Write to Dept. R-21.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

R-357

Supply trade news (cont'd)

with the Kettle River Treating Company and Central Creosoting Company prior to joining the T. J. Moss Tie Company in 1920. Mr. Penney was a past president of the American Wood Preservers Association, being elected president in 1931.

Association news

Mississippi Valley Maintenance of Way Club

The next meeting of the club will be held on November 13 in the Louis IX Room, Fred Harvey's, Union Station, St. Louis. Principal speaker will be the district engineer, U. S. Corps of Engineers, St. Louis, who will discuss "Flood Control Work on the Mississippi and Missouri Rivers in the St. Louis Area." The social hour will commence at 5:30 pm. Dinner will be served at 6:30.

Northwest Maintenance of Way Club

The November meeting of the club will be held on the 16th at Coleman's Restaurant, Ford Parkway, St. Paul, Minn. Principal speaker will be J. F. Beaver, chief engineer, system, Southern, who will discuss that road's method of laying continuous welded rail. He also will present a motion picture to illustrate the method. Dinner will be served at 6:30 pm, preceded by the usual social hour.

Maintenance of Way Club of Chicago

The second meeting of the current season will be held on November 20 at the Midland hotel, 172 W. Adams St., Chicago. Principal speaker will be Virgil E. Gunlock, chairman of the board, Chicago Transit Authority. Mr. Gunlock will give his views on handling the growing transportation problem in Chicago. As usual, the social hour will commence at 5:30 pm, with dinner starting at 6:30.

Nominations announced for new AREA officers

As reported in the October issue, the Nominating committee met at Chicago on September 18 and nominated a slate of officers to be elected at the 1½-day annual meeting next March. C. J. Code, assistant chief engineer-staff, Pennsylvania, Philadelphia, Pa., now senior vice president of the association, was nominated as president. T. F. Burris, chief engineer, system, Chesapeake & Ohio, Huntington, W. Va., was nominated as junior vice president. L. A. Loggins, chief engineer, Southern Pacific Lines in Texas and Louisiana, Houston, Tex., now junior vice president of the association, automatically will be advanced to senior vice president.

The directors nominated (four to be elected) are:

C. E. Defendorf, chief engineer, New York Central, New York; T. B. Hutcheson, chief engineer, Seaboard Air Line, Richmond, Va.; W. L. Young, chief engineer, Norfolk & Western, Roanoke, Va.; A. S. Krefting, chief engineer, Soo Line, Minneapolis, Minn.; D. T. Faries, chief engineer, Bessemer & Lake Erie, Greenville, Pa.; John Ayer, Jr., chief engineer, Denver & Rio Grande Western, Denver, Colo.; C. Neufeld, engineer of bridges, Canadian Pacific, Montreal, Que.; and D. V. Messman, assistant to chief engineer, Southern, Washington, D. C.

For members of the Nominating committee (five to be elected):

J. J. Schmidt, assistant director research, Denver & Rio Grande Western, Denver, Colo.; A. L. Sams, principal assistant engineer, Illinois Central, Chicago; E. M. Hastings, Jr., wire crossing engineer, system, Chesapeake & Ohio, Richmond, Va.; J. F. Beaver, chief engineer, Southern, Washington, D. C.; P. D. Brentlinger, forester, Pennsylvania, Philadelphia, Pa.; B. B. Lewis, professor of railway engineering, Purdue University, Lafayette, Ind.; F. N. Beighley, roadway engineer, St. Louis-San Francisco, Springfield, Mo.; L. C. Collister, manager, Tie and Timber Treating Department, System, Atchison, Topeka & Santa Fe, Topeka, Kans.; S. E. Tracy, superintendent work equipment, Burlington Lines, Chicago; and F. A. Hess, maintenance of way engineer, Indiana Harbor Belt, Hammond, Ind.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 Stat. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION of Railway Track and Structures published monthly at Pontiac, Illinois for November, 1961.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Robert G. Lewis, 30 Church St., New York 7, N. Y.; Editor, Merwin H. Dick, 79 W. Monroe St., Chicago 3, Ill.; Associate editor, R. E. Dove, 79 W. Monroe St., Chicago 3, Ill.; General Sales Manager, Duane C. Salisbury, 30 Church St., New York 7, N. Y.

2. The owners are: Simmons-Boardman Publishing Corp., 30 Church St., New York 7, N. Y. Stockholders of one per cent or more are: James G. and Louise Lyne, 30 Church St., New York 7, N. Y., Arthur J. McGinnis, 30 Church St., New York 7, N. Y., Joseph or Katherine Sanders, 2909 Maple Ave., Dallas 4, Texas, John R. Thompson, 79 West Monroe St., Chicago 3, Ill., Mrs. E. S. Fenton, c/o Russell & Russell, 41 E. 42nd St., New York 17, N. Y., J. Streicher & Co., 2 Rector St., New York 4, N. Y. Partners of J. Streicher & Co. are: Joseph Streicher, Jack L. Streicher, Ethel Streicher, Judson Streicher, all of 2 Rector St., New York 4, N. Y., Morton & Co., c/o Marine Midland Trust Co., 120 Broadway, New York 15, N. Y.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

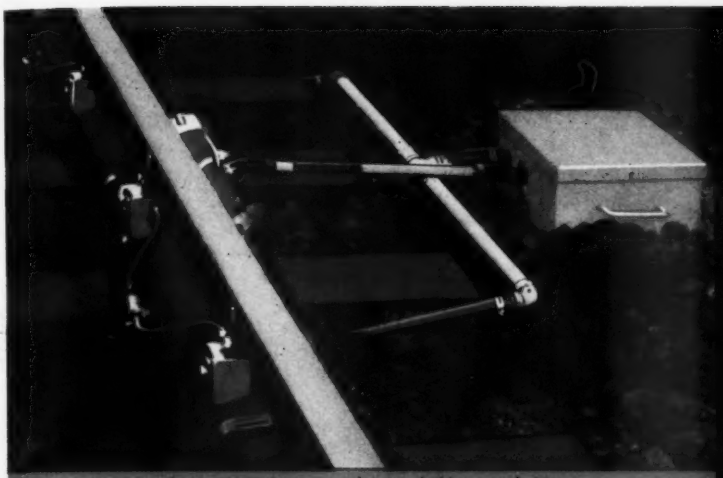
5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 6,703.

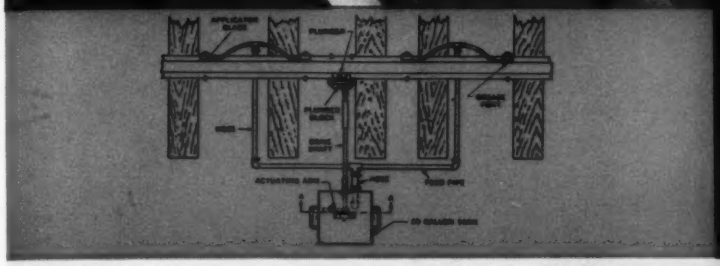
MERWIN H. DICK, Editor

Sworn to and subscribed before me this 29th day of September, 1961.

[SEAL] ELAINE R. NARDI, Notary Public
(My commission expires April 25, 1964)

ADVERTISERS IN THIS ISSUE





ACF

MAINTENANCE-OF-WAY EQUIPMENT

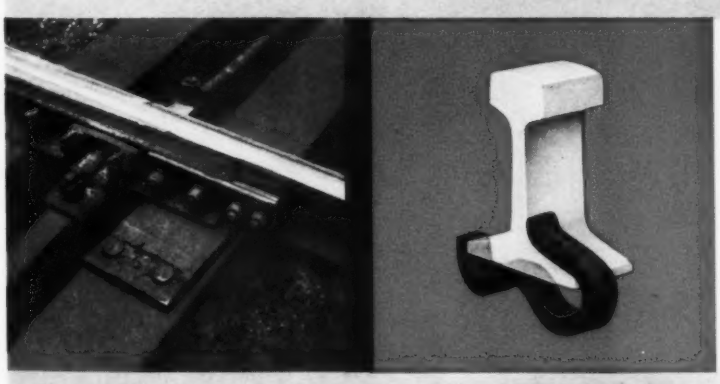
KEEPS 'EM ROLLING

▲ M&S GREASE-TYPE RAIL LUBRICATOR

Here is today's most effective and lowest cost method of reducing track wear. The rugged M&S Rail Lubricator can be installed quickly and simply without shims of any kind and is held in position with clip bolts. Four applicators 26" apart distribute grease evenly and continuously along the rail—no wiping bars or special rail needed, no valves or drilling of rail required.

The heat-treated, high carbon-high chrome tool steel blades are easily removed in track for cleaning and can be replaced inexpensively. All moving parts are self-lubricated . . . gear pump and ratchet drive are always submerged in grease . . . plunger block contains its own reservoir of oil which lubricates working parts.

Drive shaft and feed hoses are low to prevent stumbling by track men; long proven thoroughly reliable type drive shaft.



◀ M&S RAIL ANCHOR

Made in one piece from heat-treated high carbon spring steel bars, the M&S Rail Anchor grips the rail uniformly over large surfaces. Large spring take-up provides adequate grip on rails that are reasonably worn or that are on low side of the rolling tolerance. Can be applied by machine or hand and when installed with maul or spike maul, the M&S Rail Anchor can never be over-driven; can be applied and reapplied indefinitely without loss of efficiency; striking angle is at 45° so that a glancing blow cannot hit the rail web. Due to large bearing area on top of rail base, possibility of damage by derailed wheels is reduced to an absolute minimum. Simple to install, the rugged M&S Rail Anchor provides large bend radii where high tensile stresses are encountered. In addition, it does not extend too far into ballast—only 1⅛" below base of rail.

▲ M&S SWITCH POINT PROTECTOR

The rugged Switch Point Protector is quickly installed by means of simple clip bolts—no holes to drill because existing holes in switch point and reinforcing bar are utilized. Replaceable protector blades, made of alloy steel and heat treated to give maximum wear hardness, actually cost less than welding up switch points and are quick and easy to install. The economical Protector can even be used on mainline track since it is fastened to the switch point and clears wheel flanges when point is open. There is no load against opposite point; that is, it does not throw opposite wheel flange against opposite point. The M&S Switch Point Protector fits right or left hand switches; available for Interlocking or Power Switches.

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☐ Rail Lubricator ☐ Rail Anchor ☐ Switch Point Protector

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ADDRESS_____

CITY_____ ZONE____ STATE_____

GREATEST ADVANCES YET IN WEED AND BRUSH CONTROL!

New liquid **UROX**® gives 8 to 18 months control of weeds and brush!

New liquid **URAB*** knocks out roots of brush, briars and weed trees!

General Chemical presents UROX and URAB—revolutionary new herbicides that enable you to control both weeds and deep-rooted brush faster, longer and more economically than ever before.

New liquid UROX is the first liquid substituted urea-type herbicide developed for railroads. It's fast-acting . . . burns back annual and perennial grasses as well as broadleaved weeds within 12 hours after application, regardless of weather. It's long-lasting . . . just one application wipes out weeds for 8 to 18 months. Effects are cumulative, too! Control can be continued economically year after year with small "booster" doses.

New liquid URAB—the *bulldozer* of weed killers—is an exclusive development of General Chemical. Unlike other herbicides, URAB is soluble in water, giving it a unique ballast and soil-penetrating action that enables it to reach and kill the roots of tough, deep-rooted brush, briars, and weed trees.

UROX and URAB weed killers are ideal for railroad spray trains. They won't settle out . . . don't need continuous agitation . . . won't clog spray nozzles. Liquid UROX can be mixed with fuel oil, diesel oil or ordinary weed oils. Liquid URAB is completely soluble in oils *or* water. Both are available in granular form, too, for controlling weeds and brush in railroad yards, on spurs and sidings, around storage depots and other railroad installations.

For complete information on revolutionary, new UROX and URAB weed killers, phone or write the nearest General Chemical office.

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